COMB MAKING
IN
AMERICA

With compliments of
Bernard Wolfe

COMB MAKING
IN
AMERICA

BIRTHPLACE OF THE COMB INDUSTRY IN AMERICA
Home of Enoch Noyes, founder of comb industry in this country, West Newbury

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COMB MAKING IN *America*

*An Account of the Origin and
Development of the Industry for which
Leominster has Become Famous
to which are added
Pictures of Many of the Early Comb Makers
and Views of the Old Time
Comb Shops*

Compiled and Privately Printed for

BERNARD W. DOYLE

PRESIDENT OF THE VISCOLOID COMPANY, INC.

In Commemoration of the

One Hundred and Fiftieth Anniversary
of the Founding of the Comb Industry in Leominster
Massachusetts

1925

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*Compiled,
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Perry Walton, Boston, Mass.*

PRINTED IN U. S. A.

FOREWORD

OMB-MAKING is one of America's oldest industries. The task, however, of writing a history of the comb industry is a difficult one, because of the scarcity of written records and the necessity of depending upon the personal recollection of facts which have been handed down by tradition. In some instances, the industries in certain centers have passed out of existence, leaving scarcely a trace other than what was obtainable from descendants of the families that once operated them. This lack of records is due to the fact that many American industries do not realize the historic value of their past. One who attempts a history of almost any American industry, therefore, is seriously handicapped. And yet America owes its commanding influence largely to its industries; and when the complete history of American progress is written, it will be based largely upon the facts presented by her specific industries.

This volume narrates briefly the place of combs in history, then takes up the narration of the industry at West Newbury, Massachusetts, and traces to the first years of the twentieth century its growth and development, especially in Leominster, Massachusetts, its present seat in America. The industry has changed this thriving town, which is about fifteen miles from Worcester and forty-five miles from Boston, from a small agricultural hamlet into an industrial center of more than twenty thousand people whose products are known throughout the world.

No effort has been spared to make this history exhaustive and accurate. Local histories, genealogies, and colonial publications, including books and newspapers, have been consulted; and all persons who could throw any light upon a vanished comb industry, or furnish facts or reminiscences about an existing comb manufactory, have been freely sought out and interviews obtained.

The thanks of the publisher are also due to Miss Harriet E. O'Brien, for her preparation of the manuscript, to Miss Frances Southard, who did some of the research, to Mr. Hans Eberhard, for the photographs, and to Miss Cornelia Randall, for the art work, all of whom are of the Walton staff.

PANORAMIC VIEW OF LEOMINSTER

Upper: showing southern part; Lower, the northern section of the City

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BIRTHPLACE OF THE COMB INDUSTRY IN LEOMINSTER
Home of Obadiah Hills, first comb-maker in Leominster

Comb Making in America

AN ACCOUNT OF THE ORIGIN AND DEVELOPMENT
OF THE INDUSTRY FOR WHICH LEOMINSTER
HAS BECOME FAMOUS

CHAPTER I

Antiquity of Combs

SENSE of beauty has always dominated mankind. Was it not Carlyle who expressed the thought that civilization commenced when the first savage began tattooing his face? Ever through the ages man has been seeking to give the crudest things a pleasing aspect.

One of the first things man sought to ornament was the hair. Far back in history are rude contrivances, not alone for the care of the hair, but for appealing to that inborn sense of beauty which all of us have. From deposits, thought to be nine thousand years old, bone combs ornamented with curiously carved animal figures have been unearthed, proving not only the antiquity of the comb but the value placed upon it. The Romans, the Danes and the Saxons, who copied the custom from their conquerors, practiced assiduously combing their hair. If old chronicles are to be taken literally, Saxon hair was long, flowing and very beautiful. No greater regard for it could be shown than in the story of a valiant young warrior who made two earnest requests of his executioner—one, that no slave should touch his hair; the other, that it should not be stained with his blood when the knife fell.

Perhaps the Egyptians, more than any other early race, took pleasure in adorning themselves. They delighted in wearing in their hair, beads, feathers, combs, pins and even shells. On their combs were curiously carved animal figures, the antelope, the giraffe, and a strange birdlike object appearing most frequently. Later Egyptian combs were often of wood, and double—the large teeth on one end, the small on the other. The center part, separating these two rows of teeth, was not only elaborately carved but often beautifully inlaid. Such combs, many of which

Pectinarius. Der Kammacher.

*Visquis inornatos disponis in ordine crines,
Pectine turbatus restituisq. comas.
Huc viridi quaecumq. studes in amoribus auro,
Seu mulier, seu vir, siue puella, veni.*

*Hic tibi pectinibus de millibus elige certum,
Qui placeat, fufis fitq. medela comis.
En pores exiguis ingentia commoda nummis,
Pectinis auxilio conciliare tibi.
Manè vagos crines qui pectine comat eburno,
Auertu cerebro plurima damna suo.*

THE COMB-MAKER (From a rare Book, Printed 1568)

Thou who in order wouldst array thy locks
neglected,
And with a comb restore thy wind-blown
tresses,
Hither, each one of green years, intent on love,
Or woman or man, or maiden, hither come!

Here for thyself from thousand combs choose one
To please thee, and for thy unkempt hair a cure
to prove (be)
Look, you can for few coins, huge gain win to
thyself—
By a comb's aid.
Whoso early his wandering locks with comb of
ivory tends,
Turns from his head aside disasters many!

Translation by Mary Lilius Richardson, Professor of Latin, Smith College

may be seen today in our museums, measure about four inches in length, and are six inches broad.

Few combs now manufactured can equal the beauty of those old ones. They are true works of art and their elaborate and costly ornamentation makes one wonder at the time spent in making them. A semicircular comb, its back plated with gold leaf, such as was worn by Mycenæan women during the era of Mycenæan culture between the sixteenth and twelfth centuries B. C., has been brought to light by modern excavations in rock-cut burial chambers. Dating from the same period, there is in the British Museum collection an ivory comb from the Mediterranean island of Cyprus, simpler than later combs, as it has but one row of teeth. On one side of another ivory comb, in this same collection, a gryphon (that fabled monster with an eagle's head and a lion's body) and a lion stand on guard; while on the other side two cranes drink at a fountain. A comb of Roman times had been carved by an amateur hand with "MODESTINA—V.H.E.E." in compliment to its fair owner; the four letters possibly abbreviating the words "Virgo Honesta et Egregia," or, translated, "Excellent Maiden Deserving of Honor." History repeatedly mentions the use of the comb by the Greeks and Romans. Herodotus tells of a spy sent by Xerxes before the battle of Thermopylæ who found Leonidas and his comrades combing their hair. Ovid describes a hair ornament of shell; and Pollux, the Greek lexicographer of the second century, states that the comb was then much worn.

So many superstitions are linked to the comb that no doubt those early carvings of strange animals could tell many an interesting legend or folk tale, if we but had the power to give them voice. Today, in far-away Kalay, the women of a Malacca tribe wear ornamented combs to prevent illness, possessing some twenty or thirty—each for a particular disease. As carefully as we seek the proper medicines, they make their geometrical designs for each malady. Some of these, perchance, are being experimented with, whereas others, tried and proved, have been handed down in the tribe from generation to generation. They depend on having these combs in their graves to safeguard them on the Great Journey.

During excavations at Glastonbury in Somersetshire, England, where the remains of an extensive prehistoric lake village have been found, loom combs were discovered which may be the ancestors of the ornamental comb now worn. Weavers on hand looms still use a comb to push the weft down to its position across the tightly stretched warp, and these early combs served the same purpose. On the mountainous, wooded Pelew Islands in the Pacific, natives wear long combs of a similar shape.

Courtesy Metropolitan Museum of Art, New York City

PREDYNASTIC IVORY COMBS DATING FROM APPROXIMATELY 4000 B.C.

Highly decorated combs worn by Japanese women are prominent among the curios of old Japan. They are made of many materials—horn, tortoise shell, ivory and even bamboo. Combs with a lacquer finish were not commonly used until the tenth century, but after that date they were numerous. Mother-of-pearl inlay is another favorite and delicately beautiful decoration. Japanese superstitions concerning the comb are numerous, some of them originating in primitive myths and legends. To throw away a comb or pick one up is considered an ill omen; to make a present of a comb or to send one to a person starting on a journey is a very proper thing to do since it symbolizes finding one's way about with ease and expresses the wish that, as easily as the comb straightens the hair, so may crooked paths straighten for the traveller.

In primitive Japan, before the introduction of Chinese culture, the comb had a place and is mentioned twice in one of her oldest books of traditions.

It would be hard to imagine a more magnificent present than the comb case sent Mary Tudor, Queen of England, on New Year's Day in 1556. It was "covered with velvet, embroidered with damask purl of damask gold garnished by a chain of silver gilt, and two combs in it." The

Courtesy Metropolitan Museum of Art, New York City

EARLY EGYPTIAN WOODEN COMBS, FROM 2,500 TO 3,000 YEARS OLD

very costliness of the gift is typical of the period. One familiar with the history of combs can picture to himself the favored courtiers of Louis XIV as they carefully combed their wigs or scratched on the door of the royal chamber with their tiny silver pocket-combs for his Majesty's permission to enter. To these same courtiers of Louis XIV is due the fashion of combing perukes so prevalent in England during the seventeenth and early part of the eighteenth centuries when the wig was at the height of its popularity. Dandies of the same period, for whom love-making was the one aim in life, carried in their pockets, along with their snuff boxes, large combs of tortoise shell or ivory. As combing the peruke was generally considered an act of gallantry, these fine gentlemen while on the mall, in the coffeehouse, or at the play gracefully combed their periwigs and thought themselves irresistible. Allusions to this custom abound in the plays of the period from the reign of Charles II to that of Queen Anne.

James Stewart, a London hairdresser, published a very comprehensive book in 1782 which he dedicated to the Prince of Wales. This book,

"Plocacosmos, or the Whole Art of Hairdressing," was widely read at the time. In this book Stewart expounds the belief that the art of hairdressing is on a plane with valiant deeds and intellectual accomplishments. All virtues "animate" his dressing-comb in producing a coiffure from hair in the "state of nature" which to him is unendurable. He stresses the importance of every detail and says the comb used must always be a "well-turned tortoise-shell tail comb."

The fashions of 1797 showed a long lock of hair, which, looped low in the neck, was brought to the crown of the head and often held in place by a comb. Both men and women wore their hair in this way, and a portrait of Landon Carter by St. Memin shows it to advantage. Other portraits of the year 1808 by the same painter showed plain straight combs in the hair. In New England one gentleman, eighty years of age, was still wearing his hair looped and fastened with a comb in 1870. It was even then so thick that, drawing general conclusions from his individual experience, he declared that cutting hair is undoubtedly the cause of all baldness.

When that rare and valuable animal, the giraffe, arrived at the Jardin des Plantes in Paris, where it was first exhibited in 1827, it furnished a name for a curious hairdress then in vogue. A high coiffure, composed of stiff loops of hair, was made even higher by the comb which surmounted it. Then, all who wished to be up-to-the-minute instead of merely up-to-date wore their hair *à la girafe* unquestioningly.

Wide metal combs, the principal hair ornaments of the nineteenth century when hair combs and hairpins were unusually popular, were placed in the hair so that they could be seen from the front. Pauline Bonaparte, Princess Borghese, the most beautiful woman of her time and favorite sister of the great Napoleon, wears a high comb after this manner in a picture by Jules LeFèvre, renowned for his portraits of women. Another picture of the period—David's famous painting of the coronation of Josephine—shows a comb and a diadem of precious stones in the hair of the Empress. Numerous Empire combs, their backs formed by upright rows of pearls or coral, are to be seen in collections.

Old Sterzing on the Brenner in Tyrol, where ancient castles stand recalling past splendors, has for centuries been famous for the high pierced comb, backed with tin foil, of the Austrian peasant women. At first known only in the immediate vicinity, these combs were later carried to far distant provinces and districts by wandering peddlers who tramped the country with their wares.

In the Indian Ocean, on the southern part of the island of Ceylon,

From "Winter, Die Kämme aller Zeiten" with kind permission of the publisher, H. A. Ludwig Degener, Leipzig

ANCIENT COMBS

1 Etruscan ivory comb 2 Fourteenth-century carved ivory comb, Italy 3 Sixteenth-century wood comb, France 4 Fifteenth-century carved ivory comb, Italy 5 Fourteenth or fifteenth-century carved ivory comb, Italy 6 Wood comb of doubtful Egyptian origin

live comb-makers of repute—the Singhalese. Their ivory combs, occasionally plain but far more often carved and fretted, are surprisingly numerous and vary greatly in the figure, plant and geometrical designs with which they are decorated. Like medieval English combs, some show traces of coloring.

Skilled craftsmen produce the elaborate Singhalese combs, but the natives of many districts make the common horn ones which sell throughout the island for a few cents and are widely used. The tools of the horn comb-maker are simple, consisting of a small adze, a vise, a few knives and files, saws of at least two thicknesses, an awl for marking and a tool for cutting the patterns marked. Cross sections of the lower part of buffalo horns furnish the material, and the tips of the horn, instead of being thrown away, are converted into tool and knife handles.

Their method of making them is to form a flat strip of horn into the comb shape desired on which lines showing how far the teeth are to be cut and lines for patterns are drawn. A vise, usually ornamented with a little primitive carving, holds the comb firmly while teeth are cut evenly and swiftly, first on one side and then on the other. Each separate tooth is then filed smooth. A chisel-shaped tool of iron cuts a pattern on the side of the comb and, as a final step in the manufacture, it is carefully polished with wood ashes and horn shavings.

Throughout the centuries ivory has been a favorite material for comb-making. Undoubtedly the most beautiful ivory combs are the liturgical ones in use in medieval times when the comb was considered a necessity in the ceremonial of the church. The majority of these combs date from the tenth century to the twelfth, are double and elaborately carved.

Many years before medieval times when the comb was introduced into the ceremonial of the Christian churches it had had a religious connection. In the temples of the pagan divinities were wardrobes which were used by their worshippers in the adornment of their statues. A comb was usually among the other precious objects kept for this purpose, and these ancient sanctuaries, often dedicated to a goddess, have probably furnished some of the most beautiful combs in the collections of the present day. Worshippers of Venus were accustomed to leave in her temples combs and other presents which they thought might win her favor, and the people of Argos consecrated a gold comb to the use of Pallas, Goddess of Wisdom. Such purposes the combs later treasured by the churches may have served. Even the custom of passing a comb through the hair of a priest before he approached the altar may have had its origin in pagan days. Long a custom in the Greek Church where it originated, the use

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ANCIENT COMBS

1 Ancient Hellenic ivory comb-case taken from a tomb at Kerteh 2 Dressing comb of bone and bone case for the comb, Viking Period, found in grave in links of Shaik, Orkney 3 Anglo-Saxon bone comb found in Thames, London 4 Yew-wood comb found in Lake dwellings, Lake of Biemme 5 Comb, Early Age of Bronze, found at Kreis, Berent 6 Bone comb, Iron Age

CURIOUS COMBS FROM FOREIGN LANDS

- 1 Comb from Fiji Islands, fastened with human bone 2 Chinese reed comb 3 Chinese wood comb
4 Indian wood comb

of the comb became established in the English service as well. Ceremonial combing, largely symbolical, seems to have been discontinued early in the sixteenth century except in consecrations, when it was used to rearrange hair disordered by the anointing.

Some of the finest examples of combs are in English collections, and in the Kensington Museum are beautiful combs of the fourteenth and fifteenth centuries, their ivory pure and white, their carving clean and sharp. On them pictures of the time appear. One sees in miniature, serenades, courtships and dancing, battlemented houses, and lords and ladies riding to the hunt with hawks on their wrists. Such romantic subjects as the storming of the Castle of Love, the stories of Pyramus and Thisbe, of the Fountain of Youth and of the Judgment of Paris are also represented. Other scenes are Biblical, such as the Nativity or the Adoration of the Magi. An Italian comb of the sixteenth century is carved with an arabesque scrollwork and busts enclosed by medallions. Thus our medieval ancestors, in working out their quaint conceits, produced with painstaking care some of the most beautiful ivory carving in the world.

What pictures of past civilizations have been made possible from the discoveries of the archeologists, and how like ourselves, indeed, were the people who lived before us! Custom and manners vary little as age follows age. Man's surroundings change rather than man. The toilet articles of antiquity are as ingenious as those of today. The comb is as a mirror, reflecting world customs centuries old, recalling the charm of queer rites and ceremonies, romance, intrigue and motley throngs of widely separated peoples.

*Mounted African Steer Horns, owned by
Horace Noyes, West Newbury*

AERIAL VIEW OF THE SQUARE, LEOMINSTER
Leominster is the Seat of the Comb Industry in America

CHAPTER II

Establishment of the Comb Industry in America

IN colonial days combs were so valuable, owing to the difficulty of getting them in America, that they are frequently mentioned as articles of uncommon importance, costly to obtain, and well worth the emphasis we find given them in colonial wills. As early as 1651 John Eliot sent back to England for "4 Boxes of Combes" which he found to be useful ornaments in winning the good will of the Indians. They must have been favorably received for, years later, in 1737, Sir William Pepperrell ordered for trade with the tribes around Saco, Maine, "1 Gross Horn Combes." A decade before the signing of the Declaration of Independence the leading papers of the colonies were advertising combs. An advertisement in a Boston *Evening Post* of 1763 reads: "Fine Dander Combs, Touper Combs with & without Cases" and another, "Fine Dandriff Combs and Tupee Cramber Combs." Ten years later appeared "Tortoise Shell Poll Combs, Ivory Tupee & Tail Combs" and also "Bent Combs."

In fact, the country seems to have had, to quote an old issue of the *Connecticut Courant*, "combs of every denomination." Great "poll combs," worn as hair ornaments, were made of shell, horn or silver. As illustrative of the great value placed upon combs in those early days, we note that in the inventory of the estate of Robert Johnson of Rowley, taken December 14, 1649, is listed "one combe, 16s 8d." This is remarkable in that the estate amounted to only £27. 4s. 11d. of which a value of £12 was placed on books and the remainder on clothing. This is the only mention of a comb to be found in the Essex County probate records previous to 1675. In 1675 the personal effects of Phillip Nowell of Salem who died at sea included "1 new ivory comb, 1s. 3d." In 1677 Nathaniel Mighill of Salem, upon his death, owned "seven Ivory combs, 7s." and John Paine of Ipswich, dying at sea in the same year, had "a turtle shell coam, 2s." William Thomas of Newbury in 1680 died possessed of "1 comb & two pr. of sissors,

3s." Thus bluff old settlers and seamen carefully treasured combs among their few possessions. How rare combs were in those early days is shown by their being considered worthy loot by the pirates who infested the coasts. In 1653 Captain Edward Hull, a pirate, robbed a trading station at Block Island owned by one Captain Kempo Sebarda, and among other goods, stole "one hundred of Combs, £2 10s." In 1666, Nicholas Vanden, a servant, who ran away from his master, Robert Cross of Ipswich, was accused of "breacken open a cheast steelin a come cost 12 penc money."

Since a large and profitable trade in combs had been established, almost every colonial dealer found it profitable to have a goodly supply on hand. Always after the arrival of a ship from England, there was a great increase in the advertisements in the newspapers. Typical of these advertisements was one which appeared in the *Boston Gazette* on November 28 and on December 5, 1737, and which read: "Just Imported from London, and to be sold at Warehouse No. 3 in Butler's Row, a Choice Variety of all sorts of cutlary and hard Ware" including "Ivory and Horn Combs,"—"all very cheap." Another which appeared in the *New England Journal* of August 29, 1738, reads: "To be sold at Public Vendue at the Royal Exchange Tavern, in King Street, Boston, a large assortment of Shoe Buttons and Shoe Buckles, Ivory Combs, Tooth Brushes . . . Horn Combes, etc."

Up to 1771 all the dealers advertised horn or ivory combs but about this year advertisements of various other kinds of combs appeared. In the *Boston News Letter* for May 9, 1771, Joseph Coolidge, Junior, announced that he "has just imported from London, and has to sell at his shop opposite Mr. William Greenleaf's, Foot of Cornhill, a Variety of Jewelry, among which are . . . marqueset and garnet, sprigs and pins, paste combs, plain tortoise-shell ditto."

Comb-making in an individual way began in America so early that it is quite impossible to fix the exact date. It is known, however, that in Needham and places about, soon after Boston was settled (1630), individuals were turning out crude combs by hand with the aid of such simple tools as a knife and hatchet. Most of the combs, however, mentioned in the earliest wills were, of course, imported and had a finish which the domestic article had not yet attained.

The first written record of the making of horn combs in this country is found in a letter in the possession of the family of Mr. George H. Cook of Leominster, which quotes from material said to have been written by Dr. Horace Mann concerning the Parker and Cook families. Dr. Mann's grandmother was a Parker. In the letter referred to, Dr. Mann mentions a Captain Robert Cook (or Robart Cooke as he sometimes signed him-

self), a resident of Needham, Massachusetts, and calls him a "horn breaker and comb maker." As Captain Cook lived in Needham from 1675 to 1756, the date of his death, this fixes the date of the first manufacture of horn combs sometime previous to 1756, or several years before Enoch Noyes cut out his first horn comb. It is interesting that George H. Cook of Leominster, a member of the comb-making establishment of Tilton and Cook, is a descendant of Robert Cook.

George Kuhn Clark in his "History of Needham" refers to this same Captain Robert Cook as a "horn breaker" and states that he lived near the Upper Falls of Charles River where he had a mill. Cook appears to have been prominent in public affairs, acting as Selectman, Town Clerk and Administrator of Estates. As his title indicates, he was Captain of the militia or Provincial troops. Perhaps his prominence in public affairs prevented him from ever pursuing his trade as "horn breaker," and that is why we can find no further record of his activity in this respect.

The real founder of the comb industry in America, however, was Enoch Noyes, who lived in a small farmhouse in the quaint New England town of West Newbury. From the industry which he started came nearly all of the workmen who in different centers of New England established thriving comb manufactories. According to the early traditions he at first cut rude combs from horn with a jackknife. So pleased was he with his first efforts that it was his practice to show his combs to many of his neighbors. As nearly as one can learn, 1759 is the date when the first combs were made by Noyes. Near the site of his house in Newbury today an old weatherbeaten post with the inscription, "The first comb made in America, report says, was made on this hill near this spot," stands as a mute reminder of Noyes and would be historically correct did it read "Near this spot Enoch Noyes founded the comb industry."

Noyes, who is described as a tall, thin and muscular youth, continued making his combs for nineteen years or more and peddled them about the neighborhood, producing also without instruction of any kind crude horn buttons and various styles of combs. As he sat absorbed in his work one day he heard a footstep and looking up saw a stranger—evidently a foreigner, to judge from his clothing. He asked Noyes for employment and opened a dusty and grimy knapsack from which he brought forth the curious tools which he as a comb-maker had used in Germany. Nothing is known about the real name of the man. It has come down through the annals of the comb industry as William Cleland, Cleland evidently being an effort to Anglicize the odd Hessian name which the stranger, who proved to be a soldier from Burgoyne's army, must have borne. The

ENOCH NOYES' HIDING PLACE IN THE CELLAR OF HIS HOME IN WEST NEWBURY

Hessian and Enoch Noyes worked together for many years, no one knows exactly how long. He not only taught Noyes how combs were made in Europe but gave him the tools which he had brought with him from Germany. Together they evolved the first comb, called a "case comb," made in this country. So it happened that although a Hessian did not make the first comb in America, he made possible the rapid development of the comb industry.

There are those who have doubted the advent of the Hessian and the part he played, but the veracity of the story is further substantiated by two incidents. The first, related by William Little, at one time president of the Newbury Historical Society, states that at the battle of Bennington, General Stark captured a body of Hessians in an old sawmill. As the Colonists had no place to quarter them, they were farmed out in squads. Major Little, living at Turkey Hill in West Newbury, took ten of these prisoners to his home. They were not kept under guard but allowed to come and go at their pleasure. No one knows what became of them.

It is said that the government passed a vote to send them home, but did not do so. Again in "Letters and Journals" by Mrs. Riedesel, wife of General Riedesel, the Hessian commander, we learn that "after the captured army (this refers to Burgoyne's defeat at Saratoga) had arrived at Cambridge, near Boston, the American Congress did not ratify the stipulated article in the capitulation that the troops should be shipped from Boston to England, and they were, therefore, obliged, contrary to the treaty, to remain in America as prisoners of war."

It is very probable that William Cleland was one of these prisoners, and, hearing that Noyes was a comb-maker, went to his house in search of employment. A fact which strengthens this tradition is that it was the custom of many Continental soldiers to carry with them when in service the tools of their trade and to eke out their small pay by their use whenever the opportunity offered. They must have made a strange pair, these two, even for those days; the ragged, gaunt Hessian and that odd genius Enoch Noyes who cared nothing for personal appearance and was so slovenly in his habits. We know just enough about him from descriptions to visualize a tall loosely-built man, with sharply chiselled features, prominent nose and chin, deep-set eyes all but covered by thick lashes, and long straggly hair that reached nearly to his shoulders. Haydn Brown, who remembered Enoch Noyes as an old man, wrote that he once saw him with his big crossbow, shooting robins on his cherry trees, and would never forget the impression he made on him.

In his day he must have been a man of action, for Sarah Anna Emery in her delightful book "Reminiscences of a Nonagenarian" writes, "Mr. Noyes was a great oddity. He would run half over the parish bareheaded and barefooted. It was no uncommon thing for him to appear at our house after dinner of a hot summer day, in only a shirt and breeches, having run across the fields two miles, 'jest to take a nooning.' A great joker and a capital story-teller, his appearance was the signal for a general frolic. He was fond of telling strangers that his father used to say he had 'four remarkable children: Molly was remarkably handsome, Tim was remarkably sloven, John was remarkably wicked and Enoch was remarkably cunning.'" With all his peculiarities he was in advance of his period in many respects, for he was a great reader of history, had the largest library of any one at the time, was the first man in the Colonies to import fruit trees from Europe and even bred special varieties of fish in an artificial pond near his home.

"Old Fact," as Enoch Noyes was familiarly known by all the villagers, was a hot-headed Tory during the war, and many times his tempestuous

From "Leominster Historical and Picturesque"

COLLECTION OF OLD COMB-MAKERS' TOOLS

nature led him to be more outspoken than was advisable for his comfort. It was due to this state of affairs that he built in his house a sort of sub-cellar, the entrance to which was by the chimney. When the town threatened to make it too hot for him after he had freely expressed his opinions, he would hasten home and disappearing down the chimney, remain in his novel hidingplace until the agitation had subsided. His presence during his hibernating period was known only by his wife, who daily lowered food in a basket by means of a rope.

We know the house in which Noyes lived and made his combs, but there appears to be some discrepancy in the stories as to just what room he chose for his shop, if such it might be termed. One story states that he shared the kitchen with his wife—he making combs, she attending to her household duties. From a more authentic source, we are told that he used the cellar, which was not only spacious but was plastered, making a clean and quiet workshop. The feeble rays which managed to struggle through the small windows crudely cut from oil paper, in the cellar door, furnished the only light. But for these inconveniences there was the compensation of a huge fireplace where every hour of the day simmered the caldron of oil in which the horn and tortoise shell were softened that they might be more easily "worked."

The small hole about five feet square in the cellar floor, the remains of the narrow brick steps leading down to it from the chimney, the bits of plaster still clinging to the sturdy walls, and the crudely cut windows, from which every trace of the oil paper has long since vanished, in the two little

doors, all exist today and bring back memories of the old comb-maker who, seated on his three-legged bench, worked away so patiently day after day.

Throngs of children often stopped their play at his cellar door to watch him as he plunged his long iron tongs into the kettle of whale oil, pulled forth the softened horns dripping with the hot oil, threw them on the earthen floor and stamped upon them with his heavy boots before placing the strips under the huge stones which would hold them flat until cool. Then reaching for his "guillotine," he would remove the wrinkles and flaws from the cooled strips of horn, and if the horn were still rough he would use his crooked shave and standing-horse to smooth it. The standing-horse made it possible for its operator to stand upright and was similar in construction to a machine used by leather finishers.

Enoch Noyes may have tossed his smoothed horn to the Hessian, who, dragging forth another tool from his worn knapsack, showed him how in Germany the surface was further reduced and smoothed by means of the "quarnet." This resembled the mason's trowel, though of uniform width and narrower, with teeth cut crosswise about five points to an inch. Like all implements of that day, it was a hand tool, and continued in use for over fifty years, until displaced by the circular "quarnet," run by a machine. Then came one of the most laborious parts of the whole process,—that of making the teeth of the comb, for in the earliest days these had to be sawed, one at a time, by hand. A curiously contrived tool of the time, the "gauge-leaf saw," was used for this purpose. It consisted of two saws set in a wooden frame, with a thin strip of plate between them. One was constructed on a slant, so that it would not cut until its mate had made a deep kerf or cut. Although a simple tool, the "gauge-leaf saw" could do very good work in skillful hands. Tradition says that this tool also came from the Hessian's sack.

When the teeth had been sawed, Enoch Noyes would sit for hours watching the Hessian as he placed the comb in the "vise" clamped on his bench and dexterously cut away the teeth at the ends with his "carlet." This tool, about an inch wide and ten inches long, was bevelled like a clapboard and had teeth on both sides. The "topper or pointer," a blunter tool, similar in form to the "carlet," finished the points of the teeth. In making dressing-combs, a curious tool called the "vidder" was used to scrape away the plate, leaving the back thicker and forming what was known as the quill back. All this completed, we can imagine Enoch Noyes looking up with pride and relief as his helper, the Hessian, handed him the one adequate tool, the "grile," or "graille," which smoothed the sides of

substantial financial returns; but the comb, which was long the pride of the comb industry in America and of Enoch Noyes, was the "case comb," a thick, heavy, poorly proportioned affair that shut into an equally clumsy handle like a modern jackknife. Although Noyes made combs from both horn and tortoise shell, he specialized in the latter, which, although now so costly and rare, were then so common that children played Indian with them.

SOME RAW MATERIALS USED FOR MAKING COMBS

Tortoise shell (center scale removed) in the Robert A. Spill Comb Shop, Leominster; and Buffalo Horn, owned by Mrs. Colburn, Leominster

CHAPTER III

Growth of the Comb Industry in West Newbury

THE early comb-makers found the shipping facilities of "Ould Newberry" a great convenience; for it had already become a shipping center and one of the largest towns in the colonies. Within its limits were the present towns of Newbury, West Newbury and Newburyport. "Ould Newberry" fostered the beginnings of many other industries besides comb-making. In Byfield Parish was built the first woolen and cotton factory in Massachusetts, and the first broadcloth manufactured in this country was made there. It was also the home of the first nail factory, and there was built the first vessel in New England and the first academy in America. In Newburyport, Master Pike published the first arithmetic, Eleazer Johnson burned the first tea in ante-Revolutionary times, and a Newburyport ship was the first to display the "Stars and Stripes" on the Thames.

From the comb shop of Enoch Noyes there sprang up in West Newbury an incredible number of other small comb-making enterprises. The very earliest of which any record remains were those of Ephraim Noyes, Major Josiah Hill, Deacon Tenny, John Parker, S. Follansbee, W. R. Noyes, Josiah Parker, Ephraim Parker, Nehemiah Follansbee, Parker Noyes, Amaziah Bailey, Thomas Carleton, D. N. P. Carleton, Isaac Emery, John Emery, John Chase, Moses Smith, Tappan Bailey, W. K. Bailey, James Chase, Abiel Lovejoy, John Sargent, Joseph Stanwood, Samuel Parker, Newman Follansbee, A. W. Noyes, William P. Bailey, John Carr, John C. Carr, Moses Carr, Moses Stiles, Joseph Danforth, M. K. Emery, Stanford Chase, G. F. H. Brown and S. Bailey. Many of these names are familiar to old residents of West Newbury today. These men also were farmers, for at that early date farming was the principal occupation, but as the comb business grew they gave more and more time to it. In all cases the work was done by hand at home, or in small shops similar to the old-time shoe shop.

SAMUEL BAILEY'S COMB SHOP ON CRANENECK HILL

Oldest comb shop now standing in West Newbury

Leonard Smith, Curator of the Haverhill Historical Society, wrote an article a few years ago entitled "West Newbury Combs" in which he recalled many of the old comb-makers, among them his uncle, James Carr, who was in the business when machinery of many kinds was in use. His machines for cutting and polishing at first were run by hand but later power was furnished by a horse harnessed into a treadmill. Mr. and Mrs. Samuel Sylvester of West Newbury specialized in coloring horn combs to give them the appearance of tortoise shell. The art of this process lay in the ability to make the irregular spots look like the natural shell. A paste was made of lime, saleratus and litharge, mixed according to the judgment of the worker and allowed to stand for twenty-four hours. The combs were then placed on a board and spattered with a feather, an old corn broom or a sponge, held in a split stick, which had been dipped into the mixture. After the coloring had dried, they were washed. The result was a tortoise-shell effect, the success of the imitation depending upon the skill of the spatterer. Amber and black effects were obtained by dipping the combs in sugar of lead for black or in aqua fortis for amber.

OLD COMB SHOP OF H. G. O. AND T. M. CHASE, WEST NEWBURY

In Europe the usual method of securing this imitation of tortoise shell was to mix pearlash, quicklime and litharge with a sufficient quantity of water and a little powdered dragon's blood, and boil them for half an hour. The hot compound was then applied to the parts that were to be colored, and allowed to stand until the color had struck. On the parts where a deeper tinge was required the composition was applied a second time. For a blacker brown the dragon's blood was omitted. Concerning the coloring of horn, a curious process is noted in the papers of the British Patent Office which, on September 26, 1889, granted to J. F. E. Bénard, patent rights on a process which gave "to articles of horn, such as combs, hair ornaments and the like, a mother-of-pearl appearance in white, green or red color." This is the only instance of such a coloring effect to be found.

Next to the Sylvesters' was the home of H. G. O. Chase and the large factory of H. G. O. and T. M. Chase. This factory and that of S. C. Noyes and Co. were the first of any importance in West Newbury. The Chases began business about 1842 or 1843. Elwood Chase, son of Thomas Meady Chase, entered the business in 1891. At first they manufactured only tortoise-shell combs, but later did an extensive business in raw and

Kindness of Elwood Chase, West Newbury, and Holder Memorial, Clinton

TORTOISE-SHELL, WOOD AND HORN COMBS

1 Carved tortoise-shell back-comb 2-3-4-5-6 Group of tortoise-shell side-combs 7 Wood comb
8 Fine toothed wood comb 9-10 Horn puff-combs 11 Indian wood comb 12 Folding comb of bone

clarified horn. They made fancy combs of every variety, hairpins, bonnet pins and puff-combs. The bonnet pins were greatly in demand about fifty or sixty years ago when women wore bonnets shaped like half of a handkerchief and tied under the chin with ribbons. As this headgear was inclined to slip, it was necessary to hold it in place by a bonnet pin. These pins, four or five inches in length, were made of horn. The ends were sharpened and the center was twisted similar to the threads of a screw. The sharp points made it easy to push through the coil of hair and the twisted center prevented it from slipping. Thus milady's bonnet was held securely in place.

At the time when large quantities of puff-combs were manufactured, it was a common sight to see a woman with six or twelve of these combs in her hair. They derive their name from the fact that they were used to puff out the hair around the face and give it a soft, fluffy appearance. Today the hairdresser's iron accomplishes the same effect.

Other odd combs manufactured at the Chase factory were the "Siamese," "Button" and "Owler" combs. The "Siamese" comb was a double affair which shut up in a case. The "Button" comb was round and was worn like a halo. The "Owler," a small side-comb, derived its name from the fact that a man sat up all night to invent the machine which made perforations in it.

In 1868 the United States Patent Office granted papers to W. Kerr, Jr., and J. A. Robbins of Boston, Massachusetts, for the manufacture of fountain combs. These combs were similar to the combs which for a number of years had been manufactured in England, and which had fitted to their back a tube containing hair oil or other liquid. "To supply the oil to the hair, a valve in the tube is opened by pressing a button, and the oil is guided by a flat longitudinal channel in the comb and perforations between the teeth of the comb to the hair."

Many of the combs made at the factories were distributed among the women of the village to be bent and polished. The polishing was mostly done by rubbing the smoothed horn or shell combs with common charcoal ashes moistened with water. An advertisement which appeared in the *Boston Gazette* on Monday, January 23, 1764, carries the headline "Cash for Ashes" and informs the public that "Any Person that will bring to John Noyes, living in Sudbury, a Quantity of good Ashes, shall have Four shillings old Ten per Bushel."

The method of bending back-combs has changed but little. The combs, slightly warmed, were tied over a long, rounded arm of wood so arranged that it could be turned. After one side of this arm was filled,

the worker swung it about and filled the other half in the same manner. By the time this was done the first combs were ready to be removed. A later process, and one which is still in use, required a number of small blocks of wood hollowed to the proper shape. The warm comb was then placed in these and covered with another block locked in place by a stick fastened through staples at the side. When the blocks were unlocked the combs had become rounded in the mold.

The poorest and coarsest of paper and tow twine were used for wrapping, and one comb on the outside showed the contents of the package. It was not until about 1835 that boxes came into use for the packing of combs. Bending and wrapping the combs, an operation generally performed by women, could not have been easy, for a West Newbury woman who had once worked in a comb shop described a dream in the following words: "I had a most horrible dream last night. I dreamed I was making combs again!" In the early days of comb-making it was customary to cut up the horn, press it, make the combs, and even wrap them in the same day.

The shop of John Marshall and his son, Charles P. Marshall, was across the street from the Chase factory, which discontinued business in February, 1895, after the death of Thomas Meady Chase on January 31st of that year, and was one of the last in West Newbury. The Marshall shop was run by horsepower of an entirely different variety from the treadmill. It resembled a circular plank road that turned horizontally as fast as the horse felt inclined to walk. John Marshall was an extremely brilliant and witty man with an aptitude for story-telling. One of his favorite tales was of an incident which occurred while he was in New York on a business trip. He was endeavoring to sell a lot of imitation tortoise-shell combs, so poorly colored that they were almost plain amber. The merchant declined to take them, saying they did not resemble tortoise shell in the least. Marshall replied in a surprised tone, "Why those were made especially for girls with yaller hair!" and sold them quickly as a novelty. The Marshall shop went out of business years ago, and today not even the factory remains. Lucien Emery and his son, with Isaac Poor as partner, also had a large factory in which the machinery was run by a steam engine.

For many years Parker Noyes of West Newbury conducted a profitable tortoise-shell comb business. He owned a large shop and employed several apprentices. In those days tortoise shell cost approximately sixteen dollars per pound; to weight it, silver coins were often placed as balance in the scales. This custom occasioned the adage that tortoise shell was worth its weight in silver. Like the other members of this prominent family, Noyes was a skilled workman and conducted his comb business

Courtesy Leominster Historical Society and Frank Spill

COMB-MAKERS' TOOLS FROM LEOMINSTER COMB-SHOPS

1 Form for bending back-combs, in the Robert A. Spill Shop 2 Engraved die for the ornamentation of high back-combs, made by Asa Archabald in the original Archabald shop 3 Engraved copper plate, for ornamenting combs, from Deacon Ward M. Cotton's shop 4 Punch die for making the open work in the old high back-combs

with marked success. Peculiar, some called him—and perhaps he inherited his share of the eccentric personality of his ancestor, but he was thoroughly liked and his integrity was never questioned. Parker Noyes died in 1843, leaving his shop and tools to his son Jacob. Jacob Noyes continued in his father's footsteps for several years until the popularity of shell combs declined, when he sold the business together with the real estate he owned in town. Stanford and John Chase, Lucien, John, Isaac and Charles Emery, were all successful comb-makers for a time but for some reason or other never succeeded to any extent, and today their names are but a faint memory in the minds of a few old West Newbury people.

Between the years 1830 and 1840, the period of greatest prosperity for the comb business in West Newbury, there were thirty-two comb shops in the town. To the original list of comb-makers were added the names of Daniel Pillsbury, Joseph Bailey, David E. Noyes, Luther G. Stevens, Uriah Bailey, Somerby C. Noyes, Increase S. Chase, John Marshall, Jacob Emery and William Carr. All the shops, excepting those of Parker Noyes and David E. Noyes, made fancy combs. The returns of the State Assessors for the year 1845 show that the value of the annual output of combs was \$70,700. This figure is undoubtedly too low, as the smallest possible amount would naturally be reported to the Assessors.

George W. Richardson of Newburyport was for many years one of the largest and most prominent of Newburyport comb-makers and the excellence of his product is remembered by many. In 1883 he entered the comb business of Carr, Brown and Company, a prominent Newburyport concern. When this firm discontinued business in 1898, George W. Richardson formed the G. W. Richardson Company which continued business until 1919 when the factory was destroyed by fire. Mr. George H. Wheeler was actively associated with the business for ten years as secretary. The G. W. Richardson Company manufactured a high-grade line of horn and celluloid combs and also hair ornaments, hairpins and novelties from celluloid. Upon George Richardson's retirement from business, he devoted his time to numerous other interests. He is now president of the Newburyport Five Cent Savings Bank, a chairman on the Board of the First and Ocean National Bank and interested as a director in several manufacturing companies.

CHAPTER IV

The Noyes Family—Their Relation to the Comb Industry

THE name Noyes has figured so prominently in the comb industry from the day of its beginning, that one cannot write of any phase of comb-making without mentioning some member of this talented family. It is necessary, to tell the story, that we retrace our steps to 1634 when Rev. James Noyes, the ancestor of the particular branch of the family in which we are interested, came to New England. The Noyes family is of Norman descent; originally the name was spelled Noye. Previous to Rev. James Noyes' emigration to America he and his cousin, Thomas Parker, taught school in Newbury, England. It was in honor of these two men that on May 6, 1635, the House of Deputies passed the following order: "Quacocunquam is allowed to be a plantation . . . and the name of said plantation shall be changed and shall hereafter be called Newbury."

Enoch Noyes, the first comb-maker, was a great-grandson of Rev. James Noyes and was born on April 8, 1743. In 1766 he married Sarah L. Emery by whom he had three sons and four daughters. Ephraim, the oldest son, followed the comb business with a degree of success, and his sons, David and William, proved that the inventive genius of their grandfather still ran in their blood.

David Emery Noyes, son of Ephraim and Mary (Brown) Noyes, was born September 20, 1795. He worked at comb-making with his father until he was about eighteen years old, when, to speak in the vernacular of the trade, he "bought his time," as was common in those days, and struck out into the world. Going first to Exeter, New Hampshire, he worked three days in a tin-shop—a short time, but long enough to convince him that the work did not suit him. He returned to West Newbury, but soon left for Philadelphia, where he was employed as a journeyman. Hardly was he established there when he heard fabulous stories about

PROMINENT COMB-MAKERS

1 ELFAMEO M. NOYES 2 DAVIS E. NOYES 3 JOSEPH P. NOYES 4 SOMERBY C. NOYES 5 SOMERBY
N. NOYES 6 HAYDN BROWN 7 FRANCIS NOYES 8 GEORGE W. RICHARDSON

Pittsburgh, where, it was said, people were flocking from all quarters, and, thinking it must be a good place for a comb-maker, he lost no time in setting forth. As soon as he arrived he bought a small plot of land, laid the foundation of a shop, and did all the carpentry with his own hands. But the land was malarial and he became ill, which so weakened his courage and strength that he relinquished the enterprise, and returned to Philadelphia to resume the work he had abandoned a few months before.

There he built the first comb-cutting machine—a very important invention which revolutionized the comb business, since it made two combs from one piece of horn and gave each a better form. As several patents were issued about this time for comb-cutting and twinning machines, there is a question about priority of patent rights. Although we cannot say definitely what various inventors contributed to the improvement and development of the machine, we do know how it worked. It was, of course, a crude contrivance but nevertheless a great improvement over the old method of sawing the teeth. One “twinning machine,” so called because two combs at a time were made on it, had for its base a sort of cast-iron stove about fifteen or eighteen inches long, ten or twelve inches wide and six inches high. In front was an opening with an iron door. At the back was a small hole from which a stove-pipe protruded. In it a charcoal fire, continually burning, kept the machine warm. On top of the stove was a sliding plate, or “drag,” above which stood a frame of iron which held a “gang of cutters,” or knives of the required shape and number for cutting the teeth. Hand-power was used to run the machine and applied by a shaft, to which was attached a balance wheel with a wooden handle by means of which one could turn both wheel and shaft. In the center of the latter was a crude cam, a sliding projection which worked a rod that forced down each tooth cutter in turn. The horn was fed to the cutters by a ratchet and a latch which forced the drag along a little at a time. A man could cut four or five dozen combs in an hour and with the introduction of steam power forty or fifty dozen. On these machines were made combs as large as a bonnet of the present day. A fashionable woman of that period did not consider herself properly dressed unless she wore at least one of these combs. The horn was sawed by hand until the coming of the foot-power lathe which in 1835 was replaced by a lathe run by horsepower. David Noyes realized the importance of the latter invention and expected great things of it.

In the mean time, he had learned that combs were in great demand in South America, and sailed for that country aboard a ship bound for Valparaiso. On the trip, wood and water gave out, which made it necessary

ORIGINAL SWING-JAW CUTTING MACHINE

Invented by David Emery Noyes, in the factory of the Noyes Comb Company, Binghamton, New York

for the vessel to put in at Montevideo. While waiting for the new supplies Noyes strolled round the city. Down a long narrow alley he saw a large comb hanging above a sign which read "Elfameo Mascaleno." He hurried toward the place and entering the shop encountered a fat old Spaniard. Since neither knew the other's language they soon resorted to pantomimic signs. Noyes pressed his hands together, jerked them apart and held up his fingers. The meaning of these gestures seems to have been readily understood by the old Spaniard who, touching his breast, said, "Elfameo Mascaleno," and then pointed to Noyes who replied, "David E. Noyes." "Ah," said the old man, "Darvid," and so he always called him.

It is evident that they speedily came to an agreement to work together, for Noyes hurried back to the vessel, gathered all his belongings and returned to the old Spaniard's shop. He remained there for three years, during which he introduced many machines and processes to his

Courtesy Bucks County Historical Society, Doylestown, Pa.

OLD TWINNING MACHINE

From the shop of Thomas Meady Chase, West Newbury; claimed to be one of the oldest in this country

employer and acquired considerable knowledge of the manners and customs of the people of old Spain. Realizing the fondness of the Señoritas for large combs, it occurred to him that Spain would be a good country in which to establish his industry. He hastened to England where there were excellent facilities for working out machinery for his new venture, and while there he constructed a graduated arc and slide triangle on which problems in triangulation could be solved at sight. He also invented an improved cutting-machine.

From Rees's Cyclopaedia

MACHINE FOR SAWING TEETH IN COMBS, 1815, AND ITS COMPONENT PARTS

Fig. 3 Assembled machine Fig. 1 I, H, Frame for holding cutters Fig. 4 K, O, N, L and Fig. 7 Brass cutters Figs. 2, 5, 6 Spindles or arbors

After remaining in England almost a year, he left in 1822 for Madrid. The chaotic political conditions of the country of which he learned at Lisbon, together with the depleted state of his funds, led him to abandon the undertaking. A versatile man and an apt observer, he had enough knowledge of navigation to accept the position of second mate, so shipped in that capacity on a vessel bound for Boston, Massachusetts.

The ship was deeply loaded with a cargo of iron, and while passing Nantucket Shoals sprang a leak. Pumps were set in action, but the water continued to rise. On this occasion as at other times, David Noyes showed his resourcefulness. He put the men to work, while he went below to take the measure of the water. As he realized that the only hope of safety

was to pump faster than the water came in, he threw off his coat and helped to pump urging all to increase their speed. In the effort he so taxed his strength that he never fully recovered from the effects. The crew, however, were saved. Arriving in Boston penniless, he borrowed five dollars to pay his passage home to West Newbury, whither he brought his new cutting-machine made in England. He lost no time in beginning work and before long he had established a highly profitable business.

About 1824 or 1825 David Noyes married Mary (called Polly) Brown Low. They had several children, Elfameo M., Joseph P., Lucasta, and Luceba—names which show Noyes' fondness for the old Spaniard, Elfameo Mascaleno.

David Noyes built two houses, a barn, and a shop, about one-eighth of a mile from the Groveland line near the house where he was born. It was in West Newbury that he invented and made with his own hands the "split mandril," a great improvement on the old lever machine produced in England. His industry and perseverance are manifested by the fact that he never had a feeding lathe or a planer. The cold chisel, file and simple hand lathe were his principal tools, but he knew how to use them.

The earliest combs in this country were cut from what was known as raw horn—horn flattened out with its original color untouched. In 1824 David Noyes invented the clarifying press by which the clarifying process, first used in 1805, was greatly facilitated. After the horn, pressed into strips, had thoroughly cooled, it was put to soak first in cold water and then in hot water and oil. When well softened it was placed between very hot irons and pressed by means of a screw lever until it became semi-transparent in color. The demand for this stock increased with the popularity of fancy combs.

In 1832 Charles H. Coffin, an enterprising merchant who sold dry goods in Newburyport, decided to build up a comb business there that would surpass any in the country. With this plan in mind, he went to David Noyes and secured his services, asking him to manage the manufacturing, while his brother-in-law, Somerby C. Noyes, attended to the business affairs of the new firm. Both agreed to the arrangement and moved with their families to Newburyport, where Coffin had rented several buildings on what later became Bailey's Wharf, at the foot of Fair Street. There they fitted up a machine shop, erected a steam engine of about fifteen horsepower, and employed several skilled mechanics and a pattern-maker. David Noyes worked with all his energy, determined to make the enterprise a success. While experimenting with a cutting-machine, he hit

upon an idea that revolutionized one branch of the comb industry, the invention of a machine for cutting, instead of sawing, the teeth of dressing-combs. Very few of these combs were made in this country, as the supply came largely from England. The new machine could cut both the coarse and fine teeth of a comb without making a change. As the name "English dressing-comb" was already known, David Noyes imitated the English ones and labelled his production "English dressing-combs." The imitation was not discovered until it was observed that the copy was better than the comb imitated. Noyes, therefore, found himself in the possession of a profitable business yielding him what in his day was a fortune.

In 1846 David Noyes sold his property in Newburyport, and on July 28th left for Newark, New Jersey. There he established another successful business which he conducted until January 7, 1861, when he sold his interest to his sons, Elfameo M. and Joseph P. Noyes. In February of the same year David Noyes died. His death was a great misfortune to the town, as he had always taken an active part in all plans for the betterment of the community. It seems hardly possible that a man of his achievements left only \$6,000. At his wife's death this sum was to be divided among their children.

In 1865 Elfameo M. and Joseph P. Noyes moved their business, then conducted under the name of E. M. Noyes and Brother, to Binghamton, New York, where it is still located. It was about this year that Elfameo Noyes invented metal back combs. Three years later Joseph Noyes improved his brother's invention by bending the metal back at each end to form end teeth. The present owners of the business are Joseph K. Noyes and Thomas McK. Noyes, sons of Joseph P. Noyes, grandsons of David Emery Noyes, and great-grandsons of Enoch Noyes. Fred Yingling of Binghamton, New York, was employed when a boy by David Noyes in his factory at Newark, New Jersey, and has worked for three generations of the Noyes family. Until a few years ago he was manager of the sandpapering room of the Noyes Comb Company at Binghamton, New York, and personally selected and slanted most of the concern's high-grade barber combs. Two of his sons were employed by the Noyes Comb Company, until a few months ago when the concern went out of business. It is interesting to note that this business had descended from generation to generation of the Noyes family for one hundred and sixty-two years. For over a hundred years the firm was noted for the unvarying excellence of the fine horn dressing-combs which it manufactured.

In the years following the revolution of 1848 throngs of German

FACTORY OF THE NOYES COMB COMPANY, BINGHAMTON, NEW YORK

refugees came to this country and settled in Newark. Among them, many of whom possessed a practical knowledge of arts and crafts, was one Christian Keller. Keller was employed at the Noyes comb factory until David E. Noyes' death occasioned the removal of the industry to Binghamton, New York. Finding himself out of employment, Keller decided to start in business for himself. In 1865 Christopher Boehm and Frederick Schmidt joined him, and the firm of Keller, Boehm and Company was formed. In 1872 the firm was dissolved and Christian Keller again had a comb shop of his own at Ripley's Lumber Dock. Upon his death his son, Ernest, succeeded him in the business. Ernest Keller now manufactures horn hair-cutting combs for barbers in the same location and is the only person in Newark making horn combs.

A prominent comb business in Newark at the present day is one that can be traced back to the influence of Ignatius Rice who came to this country from Europe. He and his brother, a manufacturer of sterling silver and

HOMESTEAD AND COMB SHOP OF SOMERBY C. NOYES, WEST NEWBURY

1 Homestead 2 Original comb shop 3 Part of the original machine shop All three buildings were at one time connected

brass novelties, formed the company known as Rice Brothers. This was the beginning of their comb manufacturing. It was not long before, under the firm name of Rice and Hochster, they were recognized as the largest and most prominent manufacturers of high-grade back-combs.

It was as superintendent of Rice Brothers in 1878 that William S. Bechtold, president and founder of the Newark Tortoise Shell Novelty Company, became interested in the industry. In 1891 Bechtold began manufacturing high-grade hair ornaments, under the name of the Newark Tortoise Shell Novelty Company, on one floor of a building at 45 Mechanic Street, Newark. The need for expansion soon forced him to move across the street to a building double the size of the first. The site of the present factory was purchased in 1905. A few years later the addition of toilet articles to the production of the company required further extension which resulted in the present plant of the Newark Tortoise Shell Novelty Company. William Bechtold is not only the holder of sixty or seventy comb patents, but is also the inventor of the "pectium comb," patented April 16, 1901, for keeping up the short back hair.

William Noyes, brother of David E. Noyes, was born June 14, 1817. Honest, just and liberal, he inherited a good share of inventive talent, but his eccentric nature prevented him from deriving the greatest benefit from his labors. New ideas were constantly springing up before him like Jonah's gourd, and he would immediately lay all else aside to develop and put them in practice. He first worked for his brother, but in 1835 he was employed in a Lowell machine shop where he gained much practical knowledge. Upon his return to West Newbury he started a small repair shop. He had conceived the idea of a walking machine, a kind of tricycle, and set out to build one. His finished product had two wheels with two offsets, or cranks, set at right angles with levers attached to a forward wheel on which the operator stood. A complicated steering apparatus was also provided. On the day set for its trial the road was lined with eager spectators—all ready to give the inventor a start. The track was a level stretch of road with a ditch on either side. At a signal from Noyes the bystanders pushed energetically, but the steering apparatus did not work, and the machine, flying into the ditch and against a stone wall, sent its operator sprawling. This was William Noyes' first and last attempt to make a walking machine, but by no means his last invention. During the years that followed, he made several cutting-machines—improved models, built like the one planned by his brother, David Noyes, and more satisfactory than a similar machine built in Leominster by Ward M. Cotton. William Noyes' machines, as a rule, were too light and therefore lacking in stability.

SOMERBY C. NOYES' ACCOUNT BOOK, OPENED IN 1838

Unable to confine himself to any particular line, William Noyes' next invention was a musical instrument, resembling the Æolian of the present day. It is related that after trying it he took it into a field and smashed it to pieces. Years later he designed a highly ingenious horsepower machine to be run by a pacing horse. It had two rocking platforms with a guard on each side to keep the horse's feet from slipping. A single trial proved it impractical and it was seen no more.

In 1841 William Noyes and Haydn Brown, his partner, were making excellent tortoise-shell combs, buying stock from houses which bought the finished goods at a fixed price. The profit was good but, as in other transactions of the time, they were forced to take notes of doubtful value and orders on storekeepers. As a result they received little actual money and had to discontinue the business.

After engaging in several more or less successful schemes, William Noyes in 1844 or 1845 went into partnership with his brother-in-law, Somerby C. Noyes, who, according to an old account book, had been

COMB FACTORY OF S. C. NOYES AND COMPANY, WEST NEWBURY
Showing old comb shop in the background and storehouse in the foreground

engaged since 1828 in making dressing-combs in a building back of his house. To Somerby C. Noyes belongs the credit of placing the comb business in West Newbury on a firm footing. Although lacking the creative ability of his brother-in-law, he possessed the unity of purpose so necessary for advancement. His factory, which was the largest and last to discontinue business in West Newbury, was conducted under the firm name of S. C. Noyes and William Noyes from the time of William Noyes' entrance until 1846.

The business of S. C. Noyes and William Noyes began, as we have learned, in a small shop at the back of Somerby Noyes' house, but by the time Brown was made a member of the firm it had moved to larger buildings directly behind the original shop. Only a portion of the machine shop now remains and stands on Church Street where it was moved a few years ago. The firm was composed of Somerby C. Noyes, Business Manager; William Noyes, Shop Manager; Haydn Brown; and Somerby C. Noyes' son, Somerby N. Noyes, who entered the business in 1855. William Noyes, contrary to the wishes of his associates, soon withdrew to engage in the engine and machine business. In all the enterprises which he under-

took his inventive instinct was strong, but his thorough knowledge of comb-making kept him primarily interested in that industry. Thus it is that even while engaged in other pursuits we find him working on a comb-sawing machine, a description of which is given in another chapter of this book. The machine was patented on June 7, 1859, and assigned to S. C. Noyes and Company.

The firm continued to prosper. From an average profit of \$500 or \$600 annually, the earnings in the first year after the introduction of the back-comb made by Haydn Brown increased to \$15,000. About 1860 the company was occupying a larger factory almost opposite the old shops. Beside the new factory was the packing house, in the lower part of which were made boxes for the combs. Each box-maker's bench had a round hole, beneath which was placed a shelf. A hot brick on the shelf kept the paste warm for the convenience of the worker. The finished boxes were sent by a lift to the floor above where the combs were placed in them. The arrangements for both the paste and the lift were the work of a man known in the countryside as "the Tinker," a Maine genius who had wandered that way and whose skill found him constant employment and later a partnership with a machinist.

The factory and the packing house are all that remain of the little group that belonged to S. C. Noyes and Company. The one formerly devoted to packing and shipping stands unused, but in the old main factory meets the West Newbury Grange. Although it makes an ideal meeting-place, there lingers a reminder of the olden days, for on warm nights the odor of horn and oil is perceptible.

The fate of the comb industry in West Newbury might have been very different had a New York rubber company, which in 1860 supplied S. C. Noyes and Company with stock for the first rubber combs made in this country, kept its contract. It was William Noyes who invented a machine that would cut teeth in rubber, thus solving the problem of making combs of this material. The right to use the machine was sold to the Long Island Comb Company, at College Point, New York, for \$7,500. About one hundred machines were ordered and Somerby N. Noyes, then a young man, was sent there to set them up. S. C. Noyes and Company used to manufacture its rubber combs in buildings back of the main factory, and the pile of dust which accumulated during the process often stood thirty feet high. While the firm was producing rubber combs, it employed about one hundred and twenty people. The output was then a thousand dozen combs a day with a profit of one dollar on every ten dozen, making a total profit of approximately \$30,000 the first year. But the New

York rubber company which furnished the material, unwilling to see a small country factory making so much money, resorted to adulterating the stock and delaying shipments until S. C. Noyes and Company was compelled to abandon this profitable phase of its business and return to the manufacture of horn combs.

The early comb-makers would tour the tanneries where both hides and horns were sent, collecting what they could; but as the comb business increased, the tanneries found it profitable to send their horn to convenient centers where comb-makers could buy it, the principal one being in Worcester, Massachusetts, because of the many tanneries located there. The green horn bought by the comb-maker was thrown in a great pile near the factory to dry so that the pith might be removed. As one can imagine, the odor from the deteriorated pith permeated the entire neighborhood. One day, when a particularly large pile of horn had collected outside the factory of S. C. Noyes and Company, so many rats were unearthed that it was necessary to procure guns and call out the employees to help shoot the pests. Within a few hours the number of rats killed totalled one hundred and thirty-nine.

After 1846 William Noyes left S. C. Noyes and Company with the purpose of building engines, as he was eager to develop some of his ideas. Somerby Noyes tried to discourage him, but in vain. He rented the lower story of the Noyes shop where he began work on a small rotary engine. The machine pleased him greatly but proved too small to be practical, so he built an eight-horsepower one which was likewise unsuccessful, and next constructed a reciprocating, double-cylinder engine that promised substantial returns for its inventor. His ideas were far in advance of the time, but, as was always the way, he tired of the engine business and on the eve of success abandoned it. Once more he became interested in comb-making, organizing a firm under the name of Carr, Brown and Company. Hardly was it established when he decided to go to Newark, New Jersey. He returned to West Newbury in 1853 and again joined S. C. Noyes and Company where he remained for nine years.

Soon discontented with the dull routine, he decided to go into the nursery business and purchased a tract of outlying land on which he built a house and barn. He bought nursery stock, employed men and spent several thousand dollars in his experimenting. Fortunately he had retained his partnership in S. C. Noyes and Company, for his new business did not prosper, and, giving up the enterprise in disgust, he returned to West Newbury.

His next step was to invent an improved sawing-machine which had a

COMB FACTORY OF W. H. NOYES AND BROTHER COMPANY, NEWBURYPORT

cam with an irregular thread on the periphery that gave two motions to the carriage holding the blank. It also had a contrivance, regulated by a screw, by which the spindle holding the saw could be pushed longitudinally while the saw was held by guides. This device cupped the saw while cutting the first tooth, and then released it. Before the invention of this machine, which made it possible to saw teeth in hard rubber, the first tooth cut would always fall out. It was patented June 7, 1859, assigned to S. C. Noyes and Company, and immediately came into general use in our country and abroad.

In 1863 William Noyes, against the advice of his friends, sold out his interest in S. C. Noyes and Company to accept an offer in Newburyport. He remained a short time in his new position and then established a small machine shop of his own, which in 1863 he moved to Ferry Wharf. That same year he went to Newburyport with his family, selling his property in West Newbury. This was the first of a long series of changes. He sold his newly established shop to F. Curtis, a steam pump manufacturer, and started another. Early in 1871 he joined his son, William H. Noyes, who had been a partner of Robert Vine in the comb business, and was working alone. Davis F. Noyes, another son, worked for them, and this was

PROMINENT NEWBURYPORT COMB-MAKERS

1 DAVIS F. NOYES 2 WILLIAM NOYES 3 WILLIAM H. NOYES

the beginning of the present W. H. Noyes and Brother Company. But the profits were small, so William Noyes accepted a position in a comb shop owned by Elias Brown at Wappingers Falls, New York. Three months later he was back in Newburyport, planning to go to Clinton, Massachusetts, where there was an extensive comb business. Finally Noyes returned to Newburyport and, entering the firm of W. H. Noyes and Brother, remained there until his death on August 5, 1885.

During the last years of his life he settled down to stern realities. Prolific in the conception of new processes, inventions were his ruling passion. But concentrated effort and patience in studying out details were lacking. He was not content to work over his inventions and improve them by degrees, but hastened from one to another. Could William Noyes in his youth have been trained to perfect one thing before beginning another, his success would have known no limits. Perhaps no other member of this remarkable family inherited in so great a degree the genius of their famous ancestor, Enoch Noyes. Indeed, he surpassed him, for while Enoch Noyes made but one article, William Noyes invented many and mastered the most complicated problems of mechanics. His career and accomplishments in the comb industry have never been equalled by any man since his time.

Today Davis F. Noyes son of William H. Noyes, and Herbert Noyes conduct the factory of W. H. Noyes and Brother on Chestnut Street in Newburyport. This business dates from 1871, when it was founded at the rear of 88 State Street by William H. Noyes. To William H. Noyes, who showed most strongly the genius inherited from his father, belongs the credit for practically all the comb machinery invented in the past fifty years. A man of vision and tenacity of purpose, William H. Noyes was one of those who made the comb industry one of the most important, and compelled manufacturers from all over the country to look to the little town of Newburyport in Massachusetts for the latest developments in comb-making machinery and methods. In 1879 Davis F. Noyes and F. R. Arnold of New York were admitted to partnership, and in 1887 S. B. Thorpe bought Arnold's interest. In the same year the present factory was erected, which has been provided with highly improved machinery, a great part of which is made in its own machine shop. In 1899 the firm increased its manufacturing facilities by the erection of a large brick boiler and engine house. It now has one of the few factories in the country making combs of raw horn and is universally noted for the exceptionally high standard of its production.

While William Noyes' sons had been establishing their own comb business in Newburyport, Somerby N. Noyes, son of Somerby C. Noyes, had been endeavoring to continue S. C. Noyes and Company in West Newbury. The skill and ingenuity of the pioneer comb-maker had descended through the generations to Somerby N. Noyes, who, even as a child displayed inventive ability. In the fifty years during which he was a member of S. C. Noyes and Company he invented many useful devices, the most important of which were the sawing, pointing and burring machines. On Saturday, October 15, 1904, at twelve o'clock, the whistle on the factory of S. C. Noyes and Company was blown for the last time. Just one week later, Somerby N. Noyes, one of the last of the West Newbury comb-makers, died at a private hospital in Boston.

Like his father, whose death had occurred several years before, he had early learned that having things done well meant doing them one's self, thoroughly and conscientiously. Both men were of unsullied integrity and their ability was universally recognized. Their vision carried to a successful close a business which belonged to them by heritage—a heritage of which they had proved themselves worthy. Although the son was brought up in prosperity, his frugality and common sense, which resulted from careful training in his youth, were apparent throughout his life.

CHAPTER V

Improvements in the Manufacture of Combs

THE development of the various processes in the manufacture of combs was slow and imperfect, and the implements used were inadequate with the exception of the grail, which is still unexcelled as a hand tool for rounding and finishing the teeth of combs. The first record of any patent issued in connection with the comb industry is that of Isaac Tryon of Connecticut, a soldier of the Revolution, who made combs on a machine of his invention, patented in 1798. From that year until 1812 there was little improvement in comb machinery except for the introduction of the wedge press.

The wedge press, perhaps the most conspicuous object in early comb-makers' shops, was usually merely a huge log of wood, four or five feet long, with a hole mortised in the center. Into this hole iron plates were placed. If the horn was to be merely straightened the irons were not heated, but after 1805, when clarification of horn was introduced, the irons were heated for this process. The softened horn, opened by means of a poker and tongs, was placed between the plates and pressure was applied by a wedge driven in at one end with a heavy wooden "beetle," or mallet. It is remarkable that any one could wield such a cumbersome affair with the force and rapidity required. Often the wedge would fly out and hit the ceiling, endangering the worker. It was at one of these presses that George W. Cook was fatally injured by a mallet in the hands of a careless workman. The use of circular saws for cutting teeth in combs began in 1809. Prior to this date ordinary saws, such as were used on the farm, were the only tools for this delicate process. As might be expected, the teeth of the earliest combs were rough and imperfectly shaped, since fine work was impossible with such crude implements.

In 1805 "clarifying" was introduced, which consisted of covering pieces of horn with tallow, warming them by the fire and pressing them

OLD ENGLISH VISE AND TOOLS FOR PREPARING HORN STOCK

Also horn in various stages of preparation

- 1 Horn 2 Cut-up horn 3 Finished plates 4 Bow saw 5 Boiling-pan 6 Straightener
7 Die 8 Vise

between hot irons. In early days horn used to be straightened in the cold press before being clarified but today the straightening and clarifying processes are combined. About twenty years later David E. Noyes invented a clarifying press which has already been described. No process has ever been discovered whereby dark stains or streaks in natural horn can be removed.

At the time when clarifying came into favor the comb business was assuming larger proportions and with increasing skill in workmanship grew the demand for American-made combs and more and more people engaged in the business. In 1809 we find the United States Government

Courtesy Bucks County Historical Society, Doylestown, Pa.

COMB-MAKERS' TOOLS

1-2 Gaills 3 Horn shave 4 Two-handed scraping knife 5 Press tongs 6 Poker

issuing patents for the invention of machinery and combs to dealers throughout the country. Patents were granted to Moses Moss of Farmington, Connecticut, and Timothy Stanley of Southington, Connecticut, for the manufacture of hair combs; to Nathaniel Jones of Southington, for making wooden combs; and to Robert Gedding of New York, for manufacturing combs from hoofs of cattle. In 1814 patent papers were issued to Joseph H. Derby of Leominster, Massachusetts, for "cutting combs at a single operation"—and to several others of the same town for "comb-making"; to J. Pulsifer of Newbury, Massachusetts, for "Splitting and Shearing Horn for Combs"; and to S. Hills, and M. Emery, Jr., of Newburyport, Massachusetts, for a "horn splitting, comb stamp, twinning machine," which replaced a crude twinning machine bought by Moses Emery and

Courtesy Bucks County Historical Society, Doylestown, Pa.

COLLECTION OF OLD COMB-MAKERS' TOOLS, HORN COMBS, CHAINS AND HORN

others from Daniel King of Rhode Island. The machine devised by King was a simple affair for cutting coarse teeth, one-fourth of an inch apart, which did only a portion of the work but was helpful. It consisted of a small thin circular saw in the center of a long spindle. The clamp, held in a movable fixture under the saw, was operated upwards, downwards and sideways by a lever and cut slits for the teeth, leaving the ends to be sawed off by hand. King sold ten or twelve of his machines in West Newbury, but the later one constructed by Emery was vastly superior to his, as it cut two combs from between the teeth of the other. King's machine continued in use, however, until about 1832. Although King's machine was simple, Emery's was very complicated. Its base was a cast-iron stove about fifteen or eighteen inches long, ten or twelve inches wide, and six inches high. The opening of the stove was in front and in a small hole at the back was a stovepipe. A charcoal fire kept warm the sliding plate on which the horn was laid. Above the sliding plate or "drag," an iron frame held cutters of the required shape and number. Hand power ran the machine and was applied by a shaft with a balance wheel to which was attached a wooden handle. A crude cam in the center of the shaft worked a sliding rod which forced down each tooth cutter in turn. The feed was controlled by a ratchet and a latch which forced the drag along. When a plate of horn stock was inserted in this machine and the balance wheel turned, two combs were made, with all the teeth cut, ready to work upon.

On September 6, 1817, David E. Noyes, who was then living in Philadelphia, was granted patent papers for inventing a machine "for twinning horn and tortoise-shell combs." It was similar in style to the one built by Emery and was worked by a long wooden handle which forced the cutters down and moved the feed. This invention greatly facilitated the process of cutting comb teeth.

Should one have tramped through Ashby Woods, not far from Leominster, in the year 1812, he would have been surprised, if not alarmed, by queer noises. But in those days men did not go "hiking" for pleasure and the woods were seldom invaded except when timber was cut. Undoubtedly this was why MacPherson Smith built, for greater security from prying eyes, a crude hut in the darkest part of Ashby Woods and there invented the screw press which was a decided success and almost instantly replaced the wedge press. The inventor, in his application for a patent, writes that this machine "consists of Two boxes of Iron or other metal of convenient magnitude say 12 and a half inches in length and 6 in depth and 4 and a half inches wide and the sides and ends 1 and one-fourth inches

The United States of America.

TO ALL TO WHOM THESE Letters Patent SHALL COME:

Whereas MacPherson Smith, a citizen of

new and useful improvement

Leominster

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETING:

I CERTIFY, That the annexed is a true
copy of a *Letter Patent* as
granted by the *United States*
to *MacPherson Smith* on the *28th*
day of *January* 188*8*.
Also a copy of the drawings
thereof, of the same, deposited in the
Patent Office.

ventions hath made oath
of the said improvement;
dollar, delivered a receipt for
the same, for that purpose;
to *MacPherson Smith* his heirs,
on the *28th* day of *January*
188*8*, and liberty of making,
vend, a description whereof, is
in the schedule hereto annexed,

he made Patent, and the Seal of the

Witness my hand and Seal of the
United States of America

In testimony Whereof, I have hereunto
set my hand and Seal of the
United States of America

Done at the City of Washington, this
28th day of January, A.D. 1888
and of the Independence of the United States of
America the forty-seventh.

J. Q. Adams

SIDENT

Secretary of State.

hereby return the same to the Secretary of State, to be
date of said, to wit on this 28th day of January in
the year aforesaid.

William West.

Attorney General of the United States.

Courtesy Leominster Historical Society

CERTIFIED COPY OF PATENT PAPERS

Issued January 28, 1818, to MacPherson Smith of Leominster, for invention of the screw press, with original certificate signed by John Quincy Adams

thick. These dimensions to be increased or diminished as may be found necessary; these boxes are each divided into 2 apartments [*sic*] in the middle for the purpose of containing coal for heating the horn and the boxes are constructed with grates through which the air passes to keep the coal burning. These boxes are placed side by side in a frame with a space between them in which are placed the plates of horn that are to be clarified; when the horn is placed between the boxes and the boxes heated they are screwed close together by means of a screw that goes through the side of the frame and is worked by a lever so that the boxes are brought into close contact between them. The boxes are fixed in a frame composed of a flat piece of timber or plank in which are set two upright pieces which are joined together by bars of iron running across them on which are placed the iron boxes above described and the screw goes through one side of the upright frame and, being turned by means of the lever, presses the horn tight between the boxes."

Patent papers for the invention were issued January 28, 1818, and the first machine was jointly owned by Jabez Lowe, Charles Hills and Thomas Hills. In principle it differed little from those used today. This type of machine served as long as horn was pressed or clarified by hand. When used as a "cold press," that is for straightening horn only, bottoms were affixed to the boxes which were then filled with cold water instead of hot coals used in clarifying. In time the screw was replaced by a huge cogwheel with an extremely long lever, by means of which tremendous pressure could be exerted with less strain on the operator. This was called the bar or cogwheel press. This press continued in use, but the cogwheel was replaced by the application of power and the machine ran on a system of belting and gears. The machine now in use differs in that hydraulic pressure has been substituted for the power formerly obtained by the use of belting and gears. Gauges of various sizes according to the thickness of the horn desired, are inserted between the blocks of iron. Steam is introduced into the boxes when horn is to be clarified and turned off when the stock is intended for raw horn combs and only needs straightening.

The hand-shave, a long, bladed shave with a wooden handle placed at right angles to the blade, was for many years a most satisfactory implement for reducing horn stock to the required thickness, but was supplanted in 1814 by the hand-splitting machine, invented by J. Pulsifer of Newbury, which was improved in 1854 by E. Prescott of Leominster. In 1867 William Noyes, Jr. of Newburyport, contrived a still better machine for splitting horn, with a sharp knife which could be adjusted to cut to any thickness. As in the case of the shaving knife, care had to be taken to

The United States of America.

TO ALL TO WHOM THESE Letters Patent SHALL COME:

Whereas *MacPherson Smith*, a Citizen of
the United States, hath alleged that he has invented a new and useful improvement
in manufacturing *turn for Combs* -

which improvement he states has not been known or used before his application; hath made oath
that he does verily believe that he is the true inventor or discoverer of the said improvement;
hath paid into the treasury of the United States the sum of thirty dollars, delivered a receipt for
the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive
property in the said improvement, and praying that a patent may be granted for that purpose;
These are therefore to grant, according to law, to the said *MacPherson Smith*, his heirs,
administrators or assigns, for the term of fourteen years, from the *28th* day of *January*
one thousand eight hundred and *eighteen* the full and exclusive right and liberty of making,
constructing, using and vending to others to be used, the said improvement; a description whereof is
given in the words of the said *MacPherson Smith*, himself; in the schedule hereto annexed,
and is made a part of these presents.

In Testimony whereof, I have caused these Letters to be made Patent, and the Seal of the
United States to be hereunto affixed.

GIVEN under my hand, at the City of Washington, this *28th* day
of *January* in the year of our Lord one thousand eight hundred
and *eighteen*, and of the independence of the United States of America
the forty *second*

James A. Monroe

BY THE PRESIDENT,

John Q. Adams

Secretary of State.

City of Washington, To Wit:

I DO HEREBY CERTIFY, That the foregoing Letters Patent were delivered
to me on the *28th* day of *January* in the year of our
Lord one thousand eight hundred and *eighteen* as he claimed;
That I have examined the same, and find them conformable to law, and I do
hereby return the same to the Secretary of State, within fifteen days from the
date aforesaid, to wit on this *28th* day of *January* in
the year aforesaid.

William West

Attorney General of the United States.

Courtesy Leominster Historical Society

CERTIFIED COPY OF PATENT PAPERS

Issued January 28, 1818, to MacPherson Smith of Leominster, for invention of the screw press

COGWHEEL SCREW PRESS

In the horn-dressing room of the Robert A. Spill Comb Shop, Leominster

have the stock tempered to the proper degree of heat before it was split. The guillotine, which had replaced the scraping knife, was in turn succeeded by the foot-trimmer, consisting of a knife held in upright slides and worked by a foot lever. Like the guillotine, it was used to trim the ragged edges of pressed stock.

Up to 1814 comb teeth had been cut by a very fine steel saw, but in that year a Leominster manufacturer invented a machine which would cut the teeth of combs in a single operation. In 1826 Joseph Williard, in his "History of Lancaster," wrote: "In consequence of the great improvement in machinery within a few years, double the quantity of this article (the comb) is manufactured with a considerable reduction in price. The improved machinery is an invention of Farnham Plummer, of this town. It will cut one hundred and twenty dozen side-combs in a day. It cuts two combs from a square piece of horn at the same time. The circular saw which had been previously used, cuts but one tooth at a time. Captain Asahel Harris, an intelligent man, who deals largely in this business, assures me that the new machine is a saving of nearly one-half in point of time, that it saves also a third part of the stock, besides much hard

Courtesy Bucks County Historical Society, Doylestown, Pa.

OLD HAND HORN-SPLITTING MACHINE

labor. It can be so constructed as to cut combs of any size." The invention of this machine was such a factor in the development of the comb industry that Mr. Williard later wrote: "There are (1826) fifteen or sixteen establishments in Lancaster for making combs in which fifty persons at least are employed. The annual sales of this article are from fifteen to twenty thousand dollars." The "topper," or "pointer," a small grail used to point and finish the sawed teeth of a handmade comb, was replaced by the grail when machine-cut teeth were introduced. The latter implement

EARLY COMB-MAKING TOOLS

- 1 Scraping knife 2-3-4 Vidders 5-6 Gravers 7 Topper or pointer 8 Bottoming saw 9 Quarnet
10 Hand jig saw

was so well adapted for the finishing of comb teeth, that only in recent years more modern machinery has been substituted for it. The "quarnet", which served to even and smooth the surface of dressing-combs after they had been shaved, continued in use until a few years ago. For many years the grails and quarnets manufactured by James Buzzell of Leominster were in great demand, and were sent to comb-makers in all parts of the country.

Engraving tools of numerous shapes are necessary in the comb shops of today, and although practically all combs are machine-made, hand engraving still appears. This is due to the fact that large concerns find it impractical to engrave small orders for expensive combs, as the dies used in engraving machines cost two or three hundred dollars apiece. The average pay of a hand engraver is from three to fifty cents for each comb, the amount depending, of course, on the elaborateness of the design. The "quiller," or quilling stock, used for cutting a bead on plain stock before the comb was shaped, disappeared when the art of embossing was perfected. The "bottoming saw," a very narrow blade with specially cut teeth and a curved handle, rounded and sharpened the spaces between the teeth of

combs and continued in use until recent times. As is the case with other hand tools, present-day machines have made it no longer needed.

The lever cutting machine, made in England by David E. Noyes, although a great improvement over the former method of forming comb teeth, was surpassed by others of later date. In 1831 a similar machine, invented by Ward M. Cotton, who came to Leominster in 1829 and for many years manufactured machinery and tools for comb-making, appeared. Like the lever machine it had an oscillating movement, but this motion was produced by a system of cams. A separate cam moved the cutter mandril but all were controlled by a crank turned by hand. Although the machine was noisy it did good work and was introduced in West Newbury by Emery Low of Leominster. Uriah Bailey, the largest comb manufacturer in West Newbury subsequent to 1826, and, according to the Index of Patents Issued from the United States Patent Office 1790 to 1873 inclusive, the first person to invent "a steel plate for pressing horn for combs," purchased the first of these machines. Several other manufacturers, realizing the advantages of it, adopted it, and soon it was in general use. The first single "split mandril" machine, also invented by

EARLY COMB-MAKING TOOLS

1-2-3-4-5 Comb patterns 6 Vidder 7-8-9 Engravers' tools

David E. Noyes, was a twinning machine for cutting teeth in long combs or side-combs. In 1834 Noyes had planned a cutting machine that would cut both the coarse and fine teeth of a comb without making a change, but there were vexing problems to be solved and it was several years before he completed one that would operate successfully. William Noyes of West Newbury built cutting machines of various styles, all modeled after those designed by his brother David E. Noyes. These machines had the double mandril, but alterations of his own made them superior to the machine invented by Ward M. Cotton of Leominster.

About 1835 wheel horsepower was introduced and is a most interesting testimonial to the ingenuity of the early comb-makers. The idea dates from 1835 when William Noyes invented his horsepower plant with its platforms built for a pacing horse. Noyes' invention, as has been said, was not a success. The originator of the type of horsepower plant first used in the shops of Deacon Charles Hills, Deacon Jonas Colburn, T. C. Merriam, Rufus Kendall and Thomas Hills is unknown, and the only part of those shops remaining today is the old horsepower building of Charles Hills on Pleasant Street, Leominster, with the grooves and holes in the walls where the pulleys and wheels operated still visible. Horsepower plants were placed in the basement. Rufus Kendall, at one time a prominent comb manufacturer of Leominster, owned the largest and most elaborate of these plants.

Thomas Hills described his horsepower plant to William Emerson, who was preparing a history of the town, and Emerson, in his book entitled "Leominster, Historical and Picturesque," says: "It consisted of a round wheel or platform over twenty feet in diameter, supported by a large center spindle reaching from the floor to the ceiling, and set at a slight angle. This spindle was furnished with gearing which connected with the gearing on the main shaft. There was a stationary stall, one side of which was built from the floor, the other from the ceiling, with an inclined walk up which the horse was led into the stall, and a strap fastened across. In addition to the usual appliances, there was, in this instance, an interesting contrivance for increasing the speed when desired. It was a cherry stick about three and one-half feet long, hinged to the side of the stall and connected by a string leading to a small boy in the story above. When the power slackened, the boy worked the string, the horse struck a livelier gait and the machinery began to hum. To counteract the sudden increase of speed, a ponderous beam was suspended from the ceiling, one end resting on a drum on the shafting overhead, so arranged as to drop and produce friction, thus regulating the speed when necessary.

From "Leominster Historical and Picturesque"

HORSEPOWER PLANT, FORMERLY IN THOMAS HILLS' COMB SHOP, LEOMINSTER

"A somewhat amusing accident happened one day, which showed the necessity of transferring the brake directly to the wheel. The shop had passed into the hands of Jas. B. Cook, and on this occasion the management and control of the power were in the hands of the proprietor's young son. The persuader may or may not have been more vigorously applied than usual, at all events the speed increased at an alarming rate, the brake was put on suddenly, and every tooth in the gearing was broken out. An opening had to be made in the side of the building and a lever introduced against the platform as a brake before the wheel could be stopped and the horse released from his perilous situation."

An improved swing-jaw cutting machine was invented by M. Damon, father of George Damon and grandfather of Murray C. Damon. This machine had two cutters which worked alternately and were set at right angles to each other. The feed was a ratchet wheel with a driving cog that could push ahead almost any amount of stock desired. It was used for cutting pin and comb teeth, chain links, small blanks for jewelry, and open work, and, like all other machines of its day, was operated by hand. Damon had a small shop in back of the old hotel where he made small fancy combs.

COLLECTION OF OLD COMB-MAKERS' TOOLS IN THE ROBERT A. SPILL COMB SHOP,
LEOMINSTER

1 Scraping knife 2 Punch 3 Quarnet 4 Iron straightening tongs

Until the introduction of the cotton buff, invented by Jonas Colburn in his shop on Pleasant Street, Leominster, combs were placed in wooden clamps fastened to the comb-maker's bench. A woolen rag, dipped in a little fine brick dust moistened enough to adhere to it, was held between thumb and fingers and rubbed over the combs until a perfectly smooth surface was obtained. Then they were turned so that the other side could be treated in the same way. The polishing was done in a similar manner, but rotten stone, chalk and vinegar were used instead of brick dust.

The cotton buff, first worked by foot, later by water power, did away with the tiring hand rubbing. These buffs, as the name implies, were at first made from cotton, but, as an enormous amount was required for each, it proved too expensive, and carpet cloth was substituted. The early comb-makers paid about thirteen cents per pound for old carpet, and eighteen pounds was required for one buff. Today buffs can be bought ready-made, but formerly comb-makers made their own. They prepared the buffs by cutting circular pieces of carpet about eighteen inches in diameter with a hole in the center and adjusting them on a spindle, which later was inserted in a movable clamp. The waste from the cutting sold

Courtesy Leominster Historical Society

COMB-RUBBING MACHINE IN AN OLD COMB SHOP, LEOMINSTER

for nine cents per pound. When power was applied, the speed of the buffs, which made about 1,300 revolutions a minute, held the pieces together. With cotton buffs fine wet sand was used for smoothing the combs, but with wool buffs hard coal ashes, sifted fine and slightly moistened, were found most effective, as they could be easily washed off and did not adhere between the teeth of the combs. The combs were next polished with rotten stone and oil, and when dry, the dust was removed by rubbing them with a clean dry buff. Today the process is the same, for nothing better than the old carpet buff and coal ashes has been discovered. The Noyes Comb Company of Binghamton, New York, uses chamois buffs instead of cotton cloth for polishing.

In the forties it was apparent that a change was taking place in the comb industry. Steam was replacing the old sweep horsepower, whose fitful speed could not be counted upon. Fashion was forcing manufacturers to keep alert, to follow conditions in other centers, and to develop new ideas. Those who could not afford modern equipment for their factories could not compete with those who were more fortunate. Affairs were rapidly reaching a crisis and it was a case of the survival of the fittest. In the same period in which the comb business of West Newbury was

declining, the industry was developing in Leominster, to which town comb-makers from all over the country came to learn the latest methods of manufacturing or to buy the newest tools and machinery.

The manufacture of comb-making machinery was commenced in Leominster in 1850 by Thurston Richardson. He began work in a small shop in the rear of what, at that time, was the comb shop of Joslin and Adams on Union Street. Richardson was a mechanic of exceptional skill and was the designer of many styles of comb-making machines in use today. He was the designer of the present model of single and double split mandrel cutting machines. A double split mandrel cutting machine is a twinning machine for cutting teeth in dressing combs and may be run either by hand or by power. The base of the machine has a cavity and is tapped out on the back side so that it can be connected with pipes and heated by steam. This is done in order to maintain an even temperature for the horn stock and so facilitate cutting of all the teeth. One pair of racks and two pairs of cutters are required to cut teeth in a dressing comb. There is also a treadle on each machine for throwing the drag when changing from coarse to fine teeth. The single split mandrel machine is similar in construction to the double split mandrel machine just described and is used for cutting teeth in side and back-combs. It has practically replaced the back-comb cutting machine which formerly served this purpose. The method of cutting comb teeth in the single split mandrel cutting machine is similar to that of cutting them in a double split mandrel machine except that there is only one pair of cutters and mandrels.

It was while Richardson was in Boston buying goods for the Union Comb Company that he contracted the disease from which he died. His death was a severe loss to the whole community but especially to his particular field of industry in which he was considered an authority. Richardson's business was continued by A. F. Gates in a shop on Central Street until 1884, when it was purchased by Gould and Cook who later moved it to the shop of A. W. Williams on Water Street.

C. E. Gould, of the firm of Gould and Cook, was born in Chelmsford in 1842 but came to Leominster while still a youth. For many years he was employed by Thurston Richardson. In 1884, in company with Frank H. Cook, brother of George H. Cook, he bought the machine shop of A. F. Gates. After Gould's death Cook continued the business alone under the firm name of F. H. Cook and Company. From time to time it was necessary for this company to increase its facilities for manufacture in order to meet an ever increasing business. F. H. Cook and Company, in addition to regular machinist work, were specialists in the manufacture

COMB-MAKING MACHINERY

1 Revolving cold horn press 2 Hand press 3 Hydraulic horn press

of a high-grade machinery and tools for making horn, tortoise-shell, celluloid and rubber combs and hair ornaments. Much of Leominster's finest comb-making machinery came from this plant.

John Mather came to this country when a boy, from Bolton, England. He learned the machinists' trade from P. C. Holmes and Company, Gardiner, Maine. In 1877 he came to Leominster from Fitchburg, where he had been employed, and in partnership with Edward Newitt opened a machine shop. In July, 1886, in company with George W. Todd, he purchased the Whitney property, formerly occupied by J. A. Stowell, and established the firm of Mather and Todd. Mather purchased Todd's interest in 1888 and became sole owner of the business. This firm has long since discontinued business.

J. A. Stowell, once prominently engaged in the machine-manufacturing business in Leominster, was born in Claremont, New Hampshire. In 1870 he came to Leominster and became a partner in the firm of Jacob and Stowell. In 1874 Stowell purchased the machine business of Waldo Whitney then located on Mechanic Street. In 1886 he moved his business to Water Street and occupied the buildings of G. F. and A. G. Morse. The members of this firm in 1903 were J. A. and A. W. Stowell. They manufactured special tools and appliances, horn presses, polka machines, steam heater tables, etc., and made a specialty of power transmission. Stowell's plant, which was equipped with every modern facility, was located on Whitney Street. Stowell continued in business until a few years ago, when he retired and went to California.

Austin A. Smith was born in Leominster, February 26, 1845. He learned the machinists' trade from Thurston Richardson. About 1864 he built a machine shop on Lindell Avenue, West Leominster, where for many years he conducted his business. Austin Smith always gave his close personal supervision to every detail of his business, and every piece of machinery which came from his shop showed a perfection of workmanship.

So much of the machinery used by comb-makers all over the world came from these old-time Leominster machine shops, that a brief description of some of the more important machines developed by Leominster machinists will not be amiss here. Grails, horn and shell shaves, carlets, vidders, guillotines, quarnets, bottoming saws and toppers were to be replaced by complicated power driven machines of many varieties. Leominster machinists co-operated with Leominster comb-makers and spared neither time nor efforts to produce and develop machinery to meet the problems of the trade. Very often comb-makers had certain ideas as

COMB-MAKING MACHINERY

1 Squaring saw machine 2 Shaping saw machine 3 Ending-up machine 4 Single-split mandrel cutting machine 5 Double-split mandrel cutting machine 6 Back-comb tooth cutting machine 7 Horn planer 8 Set of block heaters 9 Straightening press

to the design of some new machine, and when this was the case they always found the various machinists eager to carry out their plans. Perhaps the best idea of the various developments and improvements in comb-making machines can be obtained by describing them in connection with the process of comb-making. Horn stock is always pressed and clarified in the clarifying press, or merely pressed in the cold press if raw horn combs are desired. In the clarifying process the stock which has been previously soaked in hot oil for four or five minutes opened enough with a press tongs and a poker to allow it to be inserted between the steam-heated boxes or platens of a horn press where they are stretched and clarified when pressure is applied. Gauges of strip metal are placed between the press boxes to govern the thickness to which the horn is pressed. Stock intended for raw horn dressing or fine combs is not clarified being merely pressed in a raw horn press or "cold" press and the heat turned off. There are several types of raw horn presses, but many manufacturers use the same press for clarifying and pressing stock merely turning off the heat when only pressed stock is desired. Raw horn bench presses that have recesses in the boxes or platens to be filled with cold water to cool the platens more quickly are often used. As only one piece can be pressed at a time several should be installed so that if used in rotation the plates of stock may have sufficient time to cool. Another type of straightening or "cold press" consisted of a series of individual iron presses connected with and made part of a huge wheel. This wheel of presses, as they might be called, was suspended from the ceiling and partially submerged in a tank of cold water. As the comb plates were placed in each press the operator turned the wheel around until another press came into position. By the time the wheel had made a complete revolution the comb plates were sufficiently cooled to be removed and fresh warm stock inserted. A straightening press similar in construction to the one just described is used today in the factory of the Noyes Comb Company at Binghamton, New York. A type of straightening press made by F. H. Cook and Company as early as 1895 consisted of a tall framework filled with iron blocks. Wooden blocks were substituted for iron at a later date. The warm horn comb plates were put in between the blocks at the bottom and forced up through the frame until by the time they had reached the top and fell into a box, they were sufficiently cool to retain their shape.

If the horn is to be made into raw horn dressing combs, the pressed horn plates are sawed into strips of proper width on a shaping saw machine and the ends of these strips sawed off to proper lengths on a squaring saw machine before being run through a horn planer to reduce them to an even

Courtesy Bucks County Historical Society, Doylestown, Pa.

COLLECTION OF COMB-MAKERS' TOOLS

- 1 Brass kettle 2 Corn-husk buff 3 Comb-makers' bench, with display of horn combs, buttons, pieces of horn and polishing compound 4 Grailler's standing clamp, with comb in place

thickness. These three machines were manufactured at an early date by all the Leominster machinists. They performed the work first done by the "hatchet" and later by the hand "quarnet," hand and horn shaves.

The next process is to make the comb teeth in the comb blanks. They may be sawed in dressing comb sawing machines or cut in a double split mandrel cutting machine. These cutting machines were the invention of Thurston Richardson and have already been described. The single split mandrel cutting machine, very similar in construction to the double split mandrel cutting machine, was also designed by Richardson. It is now generally used instead of the back-comb tooth cutting machine to cut teeth in back and side-combs. As comb teeth are more easily and perfectly cut if the stock is warm the comb blanks are heated in a set of block heaters consisting of five iron boxes each equipped with pipes for steam heating, immediately before being cut on the mandrel cutting machines. The cutting machines are also steam heated in order that the temperature of the comb blanks may be maintained while being cut. If the teeth in comb blanks were to be sawed instead of cut the operator placed the comb blank in the clamp of a hand feed comb sawing machine. This clamp swings forward and back as each tooth is sawed, feeds along, and stops automatically when the coarse teeth are sawed in one end of the blank. The clamp with the blank still in it was then removed and placed in the other sawing machine where the fine teeth in the other half of the comb blank were sawed in a similar manner. Dressing comb sawing machines are always used in pairs; the clamps in the machines being interchangeable. The length to which the saw will cut, as well as the length of the teeth, may be adjusted by altering the shape of the gauge on the front of the machines. Of course, if only one size teeth are desired all may be sawed on a single machine provided the comb does not exceed a certain length. One operator can attend to several machines and, for his convenience, they are generally set up in a row on a long bench. Only one comb is the result when comb teeth are sawed, but, as two combs dovetailed into each other are produced from one blank when the teeth are cut, these combs should be immediately stripped apart and then driven partially together again with a driver and while still hot placed in a straightening press. The earliest comb-makers in this country used stones or pieces of iron as weights to keep stock from warping but these crude devices were soon displaced by what was known as the straightening press. One type of straightening press for trimmed horn stock, and perhaps the earliest, looked very much like a saw horse. The stock to be straightened was

placed along the top of the horse between wooden blocks which were then screwed up to hold the stock tight and straight.

After the teeth have been cut or sawed in the combs, the next process is that of reducing the sides of the comb near the points of the teeth on a beveling machine. The beveling machine which was manufactured by F. H. Cook and Company as early as 1895, consisted of an iron wheel coated with sandpaper against which the teeth on one side of the comb were pressed and beveled or pointed, and a swinging arm which held the comb next to the drum. This swinging arm could be adjusted to hold different widths of combs or to obtain the desired degree of sharpness at the points of the teeth. There have been many improvements made on this machine and today it is manufactured in several styles to suit various purposes.

After a comb has been beveled, its ends are trimmed on what is known as an ending up machine and the teeth are further shaped and pointed on burrs set on a burr spindle, which is capable of a speed of 9,000 revolutions per minute. This is accomplished by drawing the teeth of the comb over the burrs beginning at their roots and ending at the points. A bottom-

OLD CLAMP WITH WOODEN SCREW FOR PREVENTING TRIMMED STOCK FROM WARPING

In the Robert A. Spill Comb Shop, Leominster

ing burring machine, which performed quickly and effectively the work formerly done with a hand bottoming saw, was manufactured in Leominster many years ago. The bottoming machine produced by F. H. Cook and Company had a spindle on which one or more burrs revolved with their rounded edges protruding through the surface of the table of the machine. The depth and the distance back to which the base of the teeth can be rounded out may be regulated by an adjustable screw underneath and a gauge on the top of the table of the machine. Hand grails, bottoming saws and the old toppers or pointers are still used in shaping the coarse teeth of high-grade dressing combs, but the processes of rubbing and finishing are considered sufficient for finishing the teeth of an ordinary dressing comb.

"Rubbing" and polishing are performed on balls or wheels usually made of old woolen carpet (sometimes chamois or corn husks) cut into circular pieces about eighteen inches in diameter, with a hole in the center of each piece large enough for a spindle to pass through. A sufficient number of these pieces of carpet together with about the same number of smaller circular pieces placed alternately as filling are clamped between two flanges on a spindle to make a "ball" from four to six inches thick. The ends of the spindles are pointed and run in the ends of hard wood plugs held by iron plug holders or double iron plug holders on a wooden frame. The method of making and using these balls remains unchanged. The operator holds the work on the upper side of the revolving ball while the under edge runs through a mixture of hard coal ashes and water. Pumice stone or fine sand is sometimes used, but hard coal ashes sifted fine are generally preferred. Rubbing tongs are sometimes used to hold the work while rubbing, but generally the operator prefers to use his hands. After the combs have been rubbed they are polished in much the same manner on balls made like rubbing balls except they consist of cotton cloth. One half of the ball is coated with rotten stone and oil, the other half left clean. The comb which is to be polished is first held on the coated and then on the uncoated side. An upright board, fastened to the floor in front of the ball, protects the operator from the dust from the ball. After being polished and rubbed the combs are ready for shipment.

Among the many machines designed for special work on combs is the polka machine used to cut out hairpins, jewelry blanks and open work on back combs. The operator used both hands to manipulate the comb or article, using a foot treadle to operate the machine. A power jig saw is another machine used for sawing open work on back of novelty combs. Its long narrow saw blade is kept taut by means of a spiral or rubber spring

COMB-MAKING MACHINERY

- 1 Single beveling machine 2 Polka machine 3 Power jig saw 4 Hand-feed comb sawing machine
5 Fine comb tooth sawing machine 6 Horn slashing machine

that is attached at one end to a loop on the top rod and is fastened about seven inches above it, usually to the lower end of a strip of board. The other end of this spring is attached to the flooring. A shifter on the counter-shaft, which revolves at the rate of 1,000 revolutions per minute, is operated by the foot to start or stop the machine.

The small saws used in the power jig saw machines are usually made by the operator from flat cast steel wire made especially for the purpose. Realizing the jaws of an ordinary vise did not fit together perfectly enough for holding the small saws used in the power jig saw, F. H. Cook and Company made a vise especially for this purpose. As horn stock must be kept warm for practically all the processes it is required to go through to become a comb, steam heater tables tapped for connection with steam pipes were made in all the Leominster machine shops for the convenience of comb-makers.

Horn back-combs and novelty combs of all descriptions are made from clarified horn stock, which, after being shaved either by hand with a horn shave or run through a power splitting machine, is again heated in hot water and cut with a large cutter of the shape required to produce two combs when the teeth are cut by the twinning method. Cutters of various sizes and shapes could be procured from any of the Leominster machine shops. Teeth in back-combs are usually cut in a single split mandrel cutting machine which is run by hand and operates in much the same manner as the double split mandrel cutting machine. Back-combs were very often engraved with hand engraving tools, but engraving machines now do this work much more cheaply. Many of the back-combs were colored, as they are today, and various color effects were considered stylish at various periods. When coloring combs imitation tortoise shell, care should be taken to select only those combs which have but little of the natural black color of the horn in them. They should first be immersed for about fifteen minutes in a jar of hot but not boiling water mixed with nitric acid. This tints them amber. After being taken out and thoroughly washed in cold water they may be spotted or streaked in places on both sides with a thick mixture of lime, saleratus and red lead in the following proportions: four quarts of lime, one quarter of a pound of saleratus, two tablespoonfuls of red lead, sufficient water to slake the lime. This mixture should be left on about half an hour, or long enough to color the comb, before being washed off in cold water. The comb is then dried thoroughly and polished.

Fine comb tooth sawing machines and pocket comb tooth sawing machines were later developments in comb-making machinery. They were similar to the dressing comb sawing machines in construction and

COLLECTION OF OLD COMB-MAKERS' TOOLS IN THE COMB SHOP OF
ROBERT A. SPILL, LEOMINSTER

1 Various styles of cutters 2 Iron straightening tongs 3-4-5 Clamps for holding combs

operation. The pocket comb sawing machines differed from the fine comb sawing machines in that they had attachments which enabled the line of the roots of the teeth to be varied to correspond with the shape of the gauge on the front side of the machine nearest the operator. Fine combs with teeth following a curved line can also be sawed on the most improved types of this machine. Fine comb sawing machines may have pocket comb attachments affixed to them and so do the work of both machines.

Horn slasher machines, welding presses for welding tortoise shell, special horn handle presses, engraving stands, rubbing tongs and dipping tongs were among the specialized machines manufactured and developed in Leominster machine shops.

As comb-making developed, Leominster kept pace with her promising industry. The old comb-maker's triangular bench, his wooden vise, crude press and cruder tools of the handicraft period had been replaced by the more productive machinery of the age of steam.

CHAPTER VI

The Hills Family and the Comb Industry in Leominster

ANY description of the comb industry in Leominster should give prominence to the Hills family, since they not only introduced the business there but were identified with it for many years. Joseph Hills, ancestor of those of the Hills family who in this part of the country spell their name with an "s," was born in Shrewsbury, England, in 1602. In 1638 he was an "undertaker," or, in other words, was one of the persons who assumed the responsibility of the voyage of the ship "Susan and Ellen" which that same year brought passengers and cargo to Boston. He first settled at Charlestown, where he became prominent in public affairs. In 1644 he was a selectman of the town. Two years later he represented it at the General Court, as the colonial assembly was then called. Re-elected in 1647, he was chosen speaker of the House of Deputies. In 1653 he was one of a committee of six to consider whether the "United Collonjes have power by the articles of Agreement . . . to ingage the Collonjes in warre . . ." His greatest public service was performed while the leading member of a committee that in 1648 reported to the General Court the first codification of the laws of the colony, which recognized the value and importance of his work, not only by a money payment, but by a grant of five hundred acres of land on the Nashua River, and the remission of his taxes during the last five years of his life. Joseph Hills died in Newburyport in the year 1688 and was buried in the old Newbury Cemetery.

Smith Hills, the immediate ancestor of the Leominster family, was the grandson of Joseph Hills and moved from West Newbury to Leominster in the autumn of 1774, buying the house and farm of Elias Carter on Pleasant Street. In the kitchen of this house, which was later owned by Cornelius Whitcomb and by B. F. Blodgett of Leominster, Smith Hills' son, Obadiah, commenced in Leominster, about 1775, the manufacture

OLD-TIME COMB-MAKERS OF LEOMINSTER

1 CHARLES HILLS 2 CAPTAIN THOMAS HILLS 3 EMERSON HILLS 4 BEZALEEL GIBSON 5 CAPTAIN
E. BALCH 6 EDMUND H. NICHOLS 7 JAMES H. CARTER 8 WARD M. COTTON 9 JAMES BURDITT

of horn combs. How or when Obadiah or his brother Silas, who helped him, learned anything about comb-making is not known, but doubtless it was from Enoch Noyes. So promising had the comb industry become in the colony, that in December, 1774, the Provincial Congress of Massachusetts recommended to the people the encouragement of horn smiths, as comb-makers were called. And the interest thus shown by the Provincial Congress may have encouraged young Obadiah to try his hand at the manufacture of combs.

Obadiah Hills later built a house of his own and conducted his comb business in one of its rooms for several years, but finally returned to Newbury. Silas Hills built a house on Pleasant Street, Leominster, in 1798, where he successfully made combs. Smith Hills, another brother, engaged in the business with him. Soon after Obadiah Hills had commenced the manufacture of combs, Joseph Tenney, John Chase and Edward Lowe, all comb-makers of West Newbury, moved to Leominster and opened comb shops. John Kendall and Jonathan Johnson were also among the earliest comb-makers in the town. James Buzzell, who worked shell and ivory as well as horn into combs, made comb tools and machinery. During the Revolutionary War the importation of combs ceased to a great extent, and as a result the home trade increased. Combs had been made in Philadelphia as early as 1759, according to the announcement of Christopher Anger, comb-maker, who informed the public that he continued to supply, "wholesale or retail, all sorts of combs and also powder horns and punchspoons." Graham's comb factory on Charter Street, Boston, where many excellent combs were made, was established in 1783.

The comb business in Leominster, carried on "to a great perfection and profit," had, in 1793, about twenty persons at work, to ten of whom it gave constant employment. At this period a small shop and a few tools were all that were needed to begin business, the whole equipment costing but a few hundred dollars. With a capital of \$100 it is said that Joseph Tenney, Edward Lowe and John Chase made \$500 worth of combs in one year. A few manufacturers had "sweep horsepower"; all others used the foot wheel. Several people did "clearing," later called "clarifying," for others who had no press. Horns were often softened and clarified by hot water instead of oil, as the latter was too expensive for general use. Whale oil was used by the early comb-makers, but today its high price makes it necessary to substitute a mineral or a paraffin oil. Comb-making in the early days was slow and arduous, with small profits and low wages. It was a fortunate journeyman who could earn a dollar a day, but even this was more than farming paid. Almost all comb-makers had one or more apprentices.

Courtesy Leominster Historical Society

HILLS FAMILY REUNION IN 1883 AT LEOMINSTER

As in most of the handicraft trades the apprentice system was the only entry to comb-making. Its rigorous requirements approached the border line of slavery, for it bound one by legal indenture to serve and obey a master and to be faithful to him in all things. An apprentice was expected to work every day, holidays excepted, from the middle of September to the middle of March. Usually he was allowed two terms of schooling, each three months long. He must not be out after nine, should attend church twice on Sunday and spend Saturday evening preparing for Sunday-school. In some cases he was given a "stint" and allowed to do overwork. This was his only chance to earn a little spending money and was considered a special favor. The opportunity usually came during the long winter evenings, when he could grind the back and teeth of the high top comb, which was in great demand, on the old foot wheel, standing on one foot and kicking out the power with the other, while his hands manipulated the comb. A skillful youth could earn ninepence (then twelve and one-half cents) between the hours of six and nine o'clock.

Some of the more generous employers gave their apprentices thirty dollars a year with which to buy clothes. Such apprentices were able to

From "The Leominster Book"

GIBSON HOMESTEAD, LEOMINSTER

Formerly the old Gibson Tavern, where Josiah Richardson, one of the very earliest comb-makers in Leominster, manufactured combs

blossom out in the height of fashion, to the envy of the less fortunate, who were often seen with darned and patched trousers and an extra patch on their well-worn cowhide boots. In those days the dealer in ready-made clothing was unknown. Green baize jacket and "pepper-and-salt" breeches were the everyday costume of the apprentice. The old "tom jerry," similar to the present blazer, was in vogue, but few could afford one. The indenture that bound the apprentice to certain duties also bound the master to certain obligations. He must treat his apprentice kindly, look after his moral character and give him what was known as a freedom suit at his majority.

The food of an apprentice was of the plainest, consisting chiefly of pan-dowdy, as a deep apple pie was then called, Indian pudding, rye cakes, salt pork, bacon and occasionally clams, salt shad or other fish. Rigid economy was the prevailing idea. It is curious that this economical trait in some of the early comb-makers of West Newbury led to the passage of a resolution limiting the number of times a week that salmon could be served to the apprentices. There was a good reason for it, as in those days

Courtesy Leominster Historical Society

OLD HOMESTEAD, HORSEPOWER BUILDING AND COMB SHOP OF
DEACON CHARLES HILLS, PLEASANT STREET, LEOMINSTER

HORSEPOWER BUILDING OF DEACON CHARLES HILLS, PLEASANT STREET,
LEOMINSTER

OLD HOME OF EMERSON HILLS, COMB-MAKER, PLEASANT STREET, LEOMINSTER

the Merrimac River abounded in salmon and, since the fish was plentiful and cost little, many employers were wont to overestimate the value of salmon as a daily food.

Half of the early comb-makers devoted themselves entirely to the industry, while the others divided their time between it and farming. Altogether they manufactured in the year 1793 about six thousand dozen combs. Jonathan Johnson alone employed five men who made about 2,500 dozen combs yearly. These combs were small with coarse teeth on one end and fine on the other. Coarse and fine combs of this kind were made principally, although small back-combs, long combs, round combs and pocket combs were also manufactured.

Deacon Charles Hills, son of Silas Hills, was the most prominent comb-maker of the second generation. After the War of 1812 he conducted a comb business for over thirty years in a shop known as the "Horsepower Building," directly opposite his residence on Pleasant Street. Both of these buildings are unchanged today. The horsepower was located in the basement of the shop, and in the room above the combs were polished. A pasture back of the horsepower was the rendezvous, on election day, of the old and young of the neighborhood. This section of the town was

Courtesy Leominster Historical Society

PART OF OLD COMB SHOP OF DEACON CHARLES HILLS, PLEASANT STREET,
LEOMINSTER

then known as Hills Road. Deacon Hills represented Leominster at the General Court from 1839 to 1841, and held many other public offices. Three brothers of Charles Hills were comb-makers and engaged in the business with him. Captain Thomas Hills, who identified himself with the militia in the War of 1812, was an extensive manufacturer of combs over fifty years ago. His residence and shops were located very near those of Deacon Hills. The Hills family and their descendants continued to make combs for more than a century and occupied the farm on Pleasant Street bought by Smith Hills and his sons in 1774. Since 1859 there have been many changes, and the family today owns no part of the original estate.

Besides the comb-makers already mentioned there was one who, though not an extensive manufacturer, held a distinctive position because he "made ivory combs equally good perhaps as those imported from any country." This was Nathaniel Lowe, who for many years carried on the comb business in Lancaster. Joseph Lincoln of Leominster manufactured excellent ivory combs for several years. Another early comb-maker and storekeeper was Bezaleel Gibson, who had for his apprentices many boys

who later became successful comb-makers, among whom were John Wetherbee, Franklin Lombard, George Wakefield, Emerson Prescott, William Damon, John B. Davis, Josiah C. Richardson, Gardner Morse, Thomas B. Wilder and Montraville Buffum. In 1816 Gibson purchased the old tavern stand of Levi Moore on West Street and four years later opened a country store there. Across the road in a small house, once used for finishing cloth, he made his combs. Emerson Prescott, after serving his apprenticeship with Bezaleel Gibson, began the manufacture of combs in 1836, continuing in this business until his death in 1870.

In the early days of comb-making there were what were known as "tramping jours" or journeymen. These "jours" used to tramp through the country with their kit of tools slung over their shoulders, looking for work. Stopping at the various comb shops along the way, they would work for a week or so at a shop until either there remained no further work or, what was more often the case, they were again seized with the "wanderlust" spirit, and they shouldered their tools and departed for another town. Among these old "tramping jours" were "Old" Luke Richardson, Manassa Fairbank and Nelson Cook.

As trade in those days was largely by barter, Gibson, who sold his combs to many of the Boston dealers, received payment in orders on various stores in Leominster whose owners bought goods of his customers. These orders Gibson in turn would hand over to his employees in payment for their services. Thus there was a continual exchange with little actual money in evidence. Henry and Joel C. Allen, Jonas K. Richardson and Bezaleel Gibson conducted the earliest stores in which the barter system was used. Gibson's death, in 1855, was a great loss to the community which had often sought him for advice and aid.

"Cat Alley" was the name commonly used by natives of Leominster to refer to Kendall Lane, a district which lay along the river bank directly in back of Main Street. Here many of the old comb-makers began the manufacture of combs, renting one or two rooms in the many comb shops located there. Among the many prominent comb concerns that were at one time located in Cat Alley were Derby and Whitcomb, Tenney and Porter, W. D. Earl and Company, Aldrich Cook, Paton and Metcalf, Deacon Ward M. Cotton, Look, Tilton and Company, Tilton, Kendall and Company, George T. Lincoln and John Mather. Captain E. A. Bennett, well-known commander during the Civil War, was associated with Aldrich Cook in the comb business until 1876.

James Bennett, James H. Carter and Captain E. Balch, for some time in partnership with Abel Bowers, proprietor of the tavern on the corner of

GROUP OF LEOMINSTER COMB-MAKERS

1 MAJOR GENERAL AUGUSTUS MORSE 2 GARDNER MORSE 3 GEORGE F. MORSE 4 EMBERSON
 PRESCOTT 5 CHARLES L. JOSLIN 6 JONAS COLBURN 7 MAJOR SENECA COLBURN 8 JAMES B.
 GALLUP 9 JAMES BENNETT

West and Exchange Streets and later of the Leominster Hotel, were also prominent in Leominster's comb industry. Carter's shop was located on the corner of West and Cotton Streets, the site of the present Episcopal church. At first his only power was furnished by horse, but later he, with Cowdry and Haskell, built two buildings and a dam, using the water power from Monoosnock Brook. There he conducted a highly profitable business until his death in 1871. After his death the enterprise was not successful and was soon discontinued. The buildings were destroyed by fire and the dam washed out by heavy rains. Bennett was born in Lunenburg in 1805, but came to Leominster about 1830 and engaged in the comb business. Some time later, due to an injury which he received while engraving combs, he left this industry and entered the insurance business.

Jonas Colburn, inventor of cotton balls for polishing combs, was another comb manufacturer. For fifty years he had a large factory on Pleasant Street, which, equipped with improved machinery, often of his own invention, was a veritable school in comb-making for many of the later comb-makers of the town. Colburn was the first and only manufacturer of rolled-over combs, large orders of which were made by him for other manufacturers. The business was conducted under the name of Colburn and Nichols for one year, after which it became Jonas Colburn again. He conducted a successful business until 1873 when he was caught in some shafting in his shop and killed. His son, George F. Colburn, a member of the firm of Jonas Colburn and Son, continued the business until his death, when his own son came into the possession of the factory, using it for the manufacture of horn hairpins, horn spatulas, horn scoops, musical instruments and merchandise.

James and Phineas Burdett, whose shop was on Lancaster Street, William Tilton of Look, Tilton and Company, and Joel Smith were all excellent comb-makers of the same period. William Tilton came to Leominster in 1852 from Ludlow, Vermont, where he had been engaged in the horn comb business, in order to go into partnership with the Look brothers. Smith, who was born in Leominster in 1812, after serving his apprenticeship with Jonas Colburn, worked for some years as a journeyman comb-maker before entering into partnership, in 1836, with George W. Smith and John Nourse. They manufactured combs in a shop south of the building later occupied by the "Leominster House." Several years later Joel Smith affiliated himself with Abel Chase and Oliver Patch. This firm, known as Patch and Smith, occupied the building which stood on the site later occupied by the Union Comb Company.

The Union Comb Company was organized by Stephen Tisdale, David

Howe, Oliver Patch, Joel Smith, John Bates and James B. Gallup. Joel Smith was president of the company from 1867, the date of its organization, to 1872, when the plant was destroyed by fire. After the destruction of the factory a new plant was erected and a new company, composed of Stephen A. Tisdale, James B. Gallup, John Bates and Charles Tilton, was formed. For many years after the reorganization, the Union Comb Company was noted for the excellence of its products. It began the manufacture of horn dressing combs about 1868 and was the only concern in Leominster that continued to manufacture dressing combs in addition to fancy combs.

At the time of the reorganization of the Union Comb Company Joel Smith withdrew and began a comb business of his own in a part of the Lockey Piano Shop. In 1879 he was joined by his nephew, Henry R. Smith. The firm, Joel Smith and Company, continued business until 1885 when Henry Smith retired. About that time the factory was destroyed by fire and Joel Smith moved to a part of the factory of W. D. Earl and Company, where he continued to manufacture horn combs until, in 1888, he moved to larger quarters in the comb shop of A. W. Williams. It was in this building that he was conducting a comb business with John Bates when he died in 1888. Joel Smith was also president of the First National Bank of Leominster.

David Howe, a dealer in horns, also manufactured combs in partnership with James Hervey at the corner of Union and Central Streets, and was later one of the organizers of the Union Comb Company. Jacob Puffer, who had served an apprenticeship with Bezaleel Gibson, was another comb manufacturer. In partnership with his son Charles, he afterwards established a wholesale peddling business for selling horn, known as C. Puffer and Company, Horn Dealers. Charles Puffer had learned the comb trade from Thomas B. Wilder, who had a comb shop on West Street, and had worked for him until beginning business for himself. Edmund H. Nichols, Nathan Sprague, Jonathan Johnson and Rufus Kendall were all of the same period. Kendall was perhaps the largest manufacturer of his day, but retired to experiment upon raising silkworms. His mulberry orchard stood on Central Street opposite Litchfield Street where a garage has recently been built. One of the original mulberry trees remains today and blooms every year.

M. Damon, who lived on Pleasant Street, Leominster, back of the old hotel which used to stand in the Square, made combs at home, taking them to the factory to be finished. Later he worked in the building which was afterwards the Frank Gates shop on Monoosnock Brook. Damon invented

many labor-saving devices and was one of the first to use Ward M. Cotton's swing-jaw cutting machine. His only son George learned the trade, whereupon the firm became Damon and Son. Damon died in 1871, and George Damon, in partnership with Dwight B. Look, conducted the business until 1881 when Look, becoming discouraged, retired. Clarence Kenney, a native of Leominster, was at one time engaged in the manufacture of horn goods with this company. Charles H. Howe, who had been employed by Patch and Smith, entered the firm at that time, and the name was changed from Look, Damon and Company to Damon, Howe and Company. Soon after the partnership was formed, small horn hairpins were added to the original line of tortoise-shell side-combs and fancy combs of all kinds. Damon, Howe and Company were among the first to manufacture horn hairpins. A sudden business depression made it necessary for the company, as well as other firms, to resort to manufacturing anything, even towel racks, in an endeavor to tide over the dull period. It was not like Civil War times and the years immediately following when the whole world seemed clamoring for horn jewelry and novelties. In those days the horn watch chain had been particularly popular, the favorite length being about one and a half yards. All the comb shops of Leominster had then worked to capacity, and from morning to night jewelry agents from all over the country had filed into the factories, snatching uncompleted chains from the racks. Without glancing at them they would fill their arms and shout: "I want these! I'll take them all!" This unprecedented demand brought forth from its musty recesses the old swing-jaw cutting machine, and it was soon found in all shops. Indeed, Leominster's many horn shops seethed with activity, and the town proudly received the homage paid her by representatives of larger and more important cities.

The close of the Civil War was celebrated in an amusing and interesting manner. On the morning of March 30, 1865, the day after the fall of Richmond, Solon Carter, who was among the first to hear the news, hastened to the comb shop of Patch and Smith, where in his most commanding manner he knocked at the door and ordered all the employees to stop work and join the celebration. Hurriedly lining them up, he commanded them to follow him. As the procession wound through the town, he stopped at all the shops and repeated his orders. He was soon the head of a large and enthusiastic crowd. Later it began to rain and the crowd adjourned to the Town Hall, where the celebration lasted most of the afternoon.

Charles Howe retired from Damon, Howe and Company, which, after the year 1902, was known as the Damon Company, to become treasurer and business manager of a new firm, the Howe Comb Company, of which

Courtesy Leominster Historical Society

HOME OF CAPTAIN THOMAS HILLS, PLEASANT STREET, LEOMINSTER

Alexander Paton was president. He also went into partnership with E. B. Kingman, who, in 1888 had organized E. B. Kingman and Company, a promising business for the manufacture of horn and celluloid combs, hairpins and novelties.

Charles L. Joslin and E. Gay Adams, both apprentices in the Jonas Colburn shop, were among the most prominent comb manufacturers of their day. Charles Joslin was born in Leominster, January 12, 1823, and was the son of Major Elias Joslin. At the age of sixteen he was apprenticed to learn the comb trade with Joseph and Thomas G. Merriam who manufactured fancy back-combs, side-combs and round combs of horn for women and children, in the old house where Joslin's grandfather and father had both lived and where the Town Farm now stands. At the age of twenty-three, Joslin, in company with Dana Graham, bought from Luther Longley a comb business which they continued under the name of Graham and Joslin in a small shop on Central Street and enlarged two years later by purchasing more land and by building what is known as the Union Comb Company dam. In 1847 they constructed a new factory.

Two years later Joslin sold his interest in the firm and engaged in a comb business with his brother-in-law, E. Gay Adams. They first occupied

a factory on Union Street but soon moved to a larger building on Water Street. While in the latter location they met with reverses and sold their business to Benjamin F. Blodgett. Joslin promised to make up the deficit as soon as he could. Some years later a new firm, which he had formed, made it possible for him to keep that promise. He even spent considerable money in an attempt to locate an old employee to whom he owed fifteen dollars. In 1871 he purchased the interest of his partner and the firm of Joslin, Palmer and Williams, manufacturers of horn and rubber jewelry, was formed. In 1887 Palmer sold his interest and Joslin and Williams continued the business until October, 1883, when Joslin retired, leaving Williams to conduct it alone. A man of wide interests, Joslin was an original director of the Leominster National Bank, president of the Leominster Savings Bank and of the Gas Light Company, and in 1859 represented the town in the Legislature. He died in 1893.

Benjamin F. Blodgett came to Leominster from Chesterfield, New Hampshire, about 1842. At first he worked for G. and A. Morse and for Joslin and Adams, becoming a member of the latter firm with which he remained until the Civil War. After purchasing the business of Joslin and Adams in 1865, Benjamin Blodgett went into partnership with James B. Gallup, who remained with him until 1867. In 1869 Benjamin Blodgett organized B. F. Blodgett and Company, and Edward F. Blodgett, his son, was admitted to the firm. Alanson Richardson was also a member of this firm until 1874 when he retired to enter the horn button industry with his son, and D. E. True was admitted to the B. F. Blodgett and Company. True remained in B. F. Blodgett and Company until his death in 1891. Franklin T. Blodgett, who was made a member of B. F. Blodgett and Company shortly after the death of his grandfather, continued as manager of the company until his death in 1918. Edward F. Blodgett, after the death of his son, being unwilling to assume additional business duties, retired from active business in 1920.

B. F. Blodgett and Company was first established for the purpose of manufacturing horn combs and horn knife handles. The latter were sent to Collinsville, Connecticut, to be fitted to knife blades, or "machetes," for shipment to Cuba, Mexico and Latin America. This concern also pressed great quantities of horn stock both for their own use and for button supply houses. The original factory, with the additions made at various times to meet the requirements of a constantly increasing business, stands at the head of Cotton Street.

In addition to being one of Leominster's most prominent comb manufacturers, Edward Blodgett, like his father, has always been active in

OLD LEOMINSTER COMB SHOPS

- 1 James H. Carter's Comb Shop
- 2 Jones Colburn's Comb Shop
- 3 Iselin, Palmer and Williams' Comb Shop, 1871
- 4 Emerson Prescott's Comb Shop

public affairs, for many years serving the town in the State Legislature. He is also vice-president and a director of the Leominster National Bank, a trustee of the Leominster Savings Bank and president of the Leominster Electric Light Company.

Jabez Lowe, father of Philip Lowe, lived in Leominster near Pleasant Street and divided his time between his farm and his comb shop. It was Jabez Lowe who, in 1822, introduced an improved press for pressing horn stock. Colonel Hervey D. Look and Emerson Prescott, who was later of the firm Prescott and Wakefield, manufactured combs in their shops on Summer Street, and used to hire prisoners from the House of Correction in South Boston, paying so much per head. Emerson Prescott came to Leominster when a boy and learned the comb trade from Bezaleel Gibson. In 1836 he began his own comb business, which, except for about two years, he continued until his death in 1870. Colonel Look also manufactured combs in partnership with his brother Dwight B. Look, and Joseph A. Look, a brother, worked for him. Later, the Look brothers were in business with William Tilton in the firm of Look, Tilton and Company. About a year after the organization of this firm Colonel Look withdrew to establish another horn comb business with his son, Charles E. Look, and several others. At the time of his death in 1879 he was a member of the firm of H. D. Look and Company.

The following story is significant of the resourcefulness of some of the early comb-makers. Two prosperous comb manufacturers went to New York by stage coach to sell a stock of amber combs. In those days methods of communication were so slow that it was not easy to keep abreast of the styles. After calling at a few stores they discovered that the demand was for black combs. Since no demand existed for amber combs one must be created. It was agreed that one manufacturer should visit several stores, ask to be shown amber combs, express great concern upon not finding any, and tell the proprietor that he must procure some immediately as the color promised to be most popular. The plan was acted upon, and when a reasonable length of time had elapsed, the other manufacturer called on the same stores, where he found eager customers.

Among the most prominent men then in the comb industry were Gardner and Augustus Morse, who conducted the largest and most progressive business of their day under the name of G. and A. Morse. Yet their names might not have lingered as they have, were it not for Gardner Morse's genial but eccentric personality. Gardner and Augustus Morse were the sons of Arnold Morse of Dorchester and descendants of a family long prominent in public affairs. At the age of sixteen Gardner came to Leominster,

EARLY COMB-MAKERS OF LEOMINSTER

1 OLIVER PATCH 2 JOEL SMITH 3 DANA GRAHAM 4 JOSIAH C. RICHARDSON 5 WINTER D. SOMERS 6 JACOB COLBURN 7 JOSEPH LOOK 8 DWIGHT B. LOOK 9 COL. H. D. LOOK

where, like the other youths of his day, he learned the comb-making trade. In 1832, after the completion of four years' apprenticeship with Bezaleel Gibson, from whom he bought the last three months of his time, he and Erastus Thompson began business on West Street, at what is now the corner of Exchange Street. They were soon succeeded by Gardner Morse and Company and moved to the old Stearns Mill, at the foot of Carter's Hill. Later the firm of G. and A. Morse, which did an extensive business in fancy horn combs and buttons, was formed. G. and A. Morse "worked" combs from tortoise shell and is said to have been the only company then using that material.

So rapid was the growth of G. and A. Morse, that there sprang up round its factory, the first in Leominster to use both steam and water power, a small community in Morse Hollow, known as "Morseville," composed of its workmen and their families. To meet the needs of this settlement the Morses established a country store. There employees could buy merchandise and provisions, which were billed to them every three months. Weekly payments would have been a novelty, indeed.

There was a decided enlargement in the comb business between the years 1845 and 1853, and from twelve to fifteen buildings were erected at an expenditure of about \$15,000. The number of employees increased to more than four hundred; the capital invested (exclusive of buildings, dams and fittings) to \$75,000; and the value of the combs manufactured to more than \$250,000 annually.

According to David Wilder, in his "History of Leominster," much of the growth during these years was in West Village "on the south branch of the Monoosnock which is formed by the confluence of the waters which come down from Baberry Hill on the South with those which come down on the West side of the Carter Hill from the North." This rapid development was due to the enterprise of A. Morse and Brother and some others. There were erected "on land that had previously been occupied merely as a pasture ground, four two-story dwelling-houses, one store and house and nine one-story cottages at an expense of at least \$15,000; also four large mills, one of brick in which two hundred persons might be employed. The cost of the mills including dams and privilege was approximately \$11,000, the average amount of capital \$20,000, and the value of combs manufactured annually averaged \$75,000." This section was the Morse Hollow, or Morseville, of which we have already spoken. For many years Gardner and Augustus Morse successfully weathered the vicissitudes of business in those days, and from time to time various men joined them but none remained long. The firm of G. and A. Morse continued in exist-

PROMINENT LEOMINSTER COMB-MAKERS

1 A. G. DERBY 2 C. A. WHITCOMB 3 ALANSON RICHARDSON 4 CHARLES L. BARRETT 5 HALDIE NICHOLSON 6 G. E. PHILLIPS 7 ARTHUR C. MERRIMAN 8 A. EUGENE NEWTON 9 JOSEPH F. GOODHUE

ence until the outbreak of the Civil War in 1861, when Augustus Morse was called to assist in fitting out troops, and accordingly severed his connection with the business, which was then continued under the name of G. Morse and Company.

Gardner Morse struggled along alone for several years, as his son, George F. Morse, who had been admitted to partnership in 1857, at the time of the formation of the Morse Comb Company, consisting of Gardner Morse, William Booth and J. F. Goodhue, was called to war. Finally the infirmities of age compelled him to retire and, although George F. Morse upon his return re-established the business in company with Augustus Morse, Gardner Morse's withdrawal really marked the end of the old-time firm that had been responsible for Morseville and the great industrial activity there. After his retirement Gardner Morse lived at his residence on West Street until his death on October 15, 1894.

Augustus Morse, brother of Gardner Morse, was born in Worcester, Massachusetts, in 1817. When he was ten years old his family moved to Fitchburg. Until 1832, when he went to Leominster, where, it will be remembered, his brother had been serving an apprenticeship for four years, to likewise learn the comb trade, he had been employed in Fitchburg, Massachusetts and Peterboro, New Hampshire. For four years he was apprenticed to his brother Gardner, receiving in payment for his services his board and \$50 a year. He then entered the firm of G. and A. Morse, with which he remained until the outbreak of the Civil War. While in the service he was made a general and received many military honors. He was also prominent in the political life of Leominster, holding such offices as Selectman, Collector of Taxes and Justice of the Peace.

George F. Morse was born in Leominster, October 16, 1835. He attended the public schools of Leominster and graduated from the Leominster High School in 1851. After spending several years in Boston in the importing business, he returned to Leominster and entered the employ of G. and A. Morse as bookkeeper. In 1857, when the Morse Comb Company was formed, he was admitted to the firm. The loss of the mill by fire ended the career of this company in 1858. Some time later the firm of G. Morse and Son was formed. This concern remained in business until 1861, when George Morse entered the army as a clerk in the Quartermaster's Department. In 1871 the firm of G. Morse and Company was formed for the purpose of manufacturing combs and dealing in horns. George and Albert Morse took over the horn-dealing part of the business in 1872 and continued in it under the firm name of G. F. Morse and Company for twelve years. During these years George Morse went to California,

GROUP OF OLDEST LIVING COMB-MAKERS TODAY, WHO HAVE CONTRIBUTED VALUABLE INFORMATION FOR THIS BOOK

1 ANDREW D. KENDALL
Leominster

2 PATRICK KENEFICK
Leominster

3 FREDERICK YINGLING
Binghamton, New York

Cuba, Mexico and Europe in the interests of his business. On these trips George Morse studied the horn situation, and it was due to his skill in purchasing horns that this business was a great financial success.

Albert G. Morse was born in Leominster in 1846. At the age of twenty-one he entered business for himself in Boston. For several years he was also engaged in various business enterprises in the West, but returned to Leominster in 1871 to form a partnership with his brother under the name of G. F. Morse and Company. Albert Morse remained a partner in this firm for twelve years, when he withdrew to organize the Hecla Powder Company of New York.

Patrick Kenefick, now ninety-four years old and the oldest living comb-maker today, was connected with the Morse Comb Company for nearly ten years. In 1861 he was employed by Andrew G. Derby and Cornelius A. Whitcomb. Patrick Kenefick continued in the comb business until age necessitated his retirement.

Cornelius Whitcomb, born in 1834, had first worked at comb-making with his father in the shop of Thomas Hills, and later was employed by Joslin and Adams. In 1857 he went to work for Wheelock and Gilchrist, where he remained until 1861, when he formed a partnership with Andrew G. Derby. Two years afterwards Dennis H. Wheelock joined them, under

COMB SHOP OF ROBERT A. SPILL, LEOMINSTER

the name Derby, Wheelock and Whitcomb. From 1866 to 1869 the firm was known as Derby and Wheelock and afterwards as Derby, Whitcomb and Company.

Seneca Colburn, better known as "the Major," had a small shop on what was later the site of the Paton Manufacturing Company. Andrew Kendall, the next oldest comb-maker in Leominster, well remembers "the Major" in days when some of the work not done in the shop was "put out," or divided among the comb-makers of the village. "My father," Kendall said, "being an expert at making comb teeth, 'the Major' would bring combs some two miles to him for this work and call for them when finished." Andrew Kendall established in 1894 the Columbia Comb Company, which manufactured a variety of horn and celluloid products, specializing in combs and hairpins. Colburn continued in business until a few years before his death. Edmund H. Nichols, who made a fortune in the comb business, was, in the beginning of his career, associated with Seneca Colburn. Nichols conducted his own business for nearly fifty years, retiring about 1874.

Robert A. Spill came to this country from Sheffield, England, in 1865, at the close of the Civil War. He first made combs entirely by hand in

GROUP OF LEOMINSTER COMB-MAKERS

1 WILLIAM D. EARL 2 THOMAS A. EARL 3 M. DAMON 4 BENJAMIN F. BLODGETT 5 WILLIAM
TILTON 6 EDWARD B. TILTON 7 DAVID HOWE 8 STEPHEN A. TISDALE 9 ALDRICH COOK

the old Harris shop in Clinton, Massachusetts, but later moved to Leominster, where he soon had a small shop of his own, with five or six employees. George B. Forbes, one of Leominster's most skillful comb-makers, was a member of the firm of Robert A. Spill and Company. This business never yielded much profit, because only an unusually fine grade of comb was made which necessitated such a high price that the sales were limited. Less expensive combs were never manufactured at the plant. After his death in 1887, his sons, Alfred and Edwin, continued to make horn combs in Leominster, but gave up the work a few years ago. Frank Spill, another son, not wishing to see his father's business come to an end, moved it to East Rutherford, New Jersey, and made it a very small part of a celluloid comb plant, the Siesel-Spill Manufacturing Company, which he had established there about twenty years before. The horn used in the East Rutherford factory is still pressed in Leominster, as the old machinery has never been moved. Since the industry was moved to East Rutherford the sales of its horn combs have doubled. The horn comb business of the Siesel-Spill Manufacturing Company consists only of the manufacture of thin, delicate combs of all shapes for barbers. This type of comb, made of raw horn, is not so generally popular as it once was, but has continued to be a favorite in barber shops, where no substitute equal to it has ever been found. Before the discovery of celluloid ornamental hair combs were also made of horn, but the material now used is either celluloid or tortoise shell.

William Daggett Earl, founder of William D. Earl and Company, was born August 5, 1830, in North Attleboro. He came to Leominster from Boston, where for several years he had been engaged in the jewelry business. In 1870, in company with his brother, Thomas A. Earl, he began manufacturing combs and other articles from horn as well as preparing horn stock. The consistent growth of this firm was due largely to Earl's tenacity of purpose. The "Earl Brand" is synonymous with the very best in hair ornaments, and for many years the combs and hairpins manufactured by W. D. Earl and Company have been known all over the country as products of the finest quality that can be made. At his death, his son, William B. Earl, succeeded him.

Frederick A. Clapp, of F. A. Clapp and Company, is a native of Conway, Massachusetts, and came to Leominster in 1871. He first worked for Joslin, Palmer and Williams, but about 1878, in company with W. F. Bigelow, began dealing in horn with an office in Lockey's shop. Later, selling his business, he began the manufacture of buttons in the shop of Tenney and Kenney, and was established only a short time when he sold

PROMINENT COMB-MAKERS AND HORN-DEALERS OF LEOMINSTER

1 JACOB PUFFER 2 C. H. TENNEY 3 CHARLES H. PORTER 4 PATRICK F. LANE 5 FREDERICK A. CLAPP 6 FREDERICK C. COLBURN

out to Porter and Metcalf and returned to the horn trade in company with C. H. Porter. About 1886 Clapp bought Porter's interest and continued alone under the name F. A. Clapp and Company. In 1891 he was one of the organizers and the first president of The Horn and Supply Company. He retired from this company in 1897 and a few years later once again started in business for himself under the firm name of F. A. Clapp and

Company. In 1903 he sold his plant to the Leominster Comb Company with whom he continued to be affiliated. While engaged in the horn industry Clapp traveled extensively, purchasing horns all over the country. He probably knew more about the buying of horns and where the best horns could be found than any man of his day.

William Booth was born in Royton, England, on August 25, 1829. He came to this country in the ship "Soldan," with his parents, landing in Boston July 28, 1848. He was first employed in the cotton mills of Millbury and Northboro, Massachusetts, afterwards serving as an apprentice for the comb-makers' trade with Samuel Gibson of Northboro. He later came to Leominster and was employed by Gardner Morse until 1861. Later he bought out a firm in Newark, New Jersey, and conducted the business under the name of William Booth and Company. After 1884 Booth manufactured celluloid goods in Leominster for A. G. Morse, and was for a time in business for himself. In 1887 William Booth was engaged in research and experimental work. William Booth was an able mechanic and the inventor of much valuable machinery.

Williams and Winn is another old Leominster firm whose name will be familiar to many as manufacturers of fine horn goods. They were originally located on Exchange Street but later moved to Water Street.

Porter M. Kimball, a native of Mt. Vernon, New Hampshire, came to Leominster from Fitchburg and established a country store. This business he continued until he began the manufacture of combs in company with F. P. Shumway in the building near the bridge on Mechanic Street, where Porter and Tenney were later located. This firm later manufactured agricultural implements, building and occupying what was known as the "Fork Factory," the present site of The Viscoloid Company, Inc.

Stephen A. Tisdale was born in 1828 in Leominster, where he learned the comb-making trade from Edmund H. Nichols. He later did designing at various times for Graham and Joslin, G. and A. Morse, and Joslin and Adams, and in 1867 was one of the organizers of the Union Comb Company, one of Leominster's well-known comb-making establishments. Stephen Tisdale was a man of remarkable inventive ability and to him belongs the credit of many important inventions, including the process of clarification of horn by steam. The invention of this process marked a definite step in the progress of the comb industry and was of inestimable benefit to comb-makers. Previous to the use of steam, comb-makers experienced considerable difficulty in clarifying horn, as much of the stock was spoiled by scorching. With Stephen Tisdale's invention, the worker was able to gauge and maintain the correct degree of heat necessary for the proper

COMB SHOP OF PATCH AND SMITH, 1865, LEOMINSTER

softening and clarifying of horn stock. The press remained the same, but steam was substituted for the charcoal fire. Tisdale's patterns for fancy combs were original, artistic and very popular.

In 1867 he was one of the organizers of the Union Comb Company, successors to Patch and Smith, and, as long as this plant continued to operate, served as its general manager and superintendent. In addition to a high-grade line of fancy horn combs, this company, with the exception of the Spill Company, was the only concern that used the saw process in making horn dressing combs in Leominster.

All comb-makers had to press their own raw stock, which necessitated a delay of from one week to ten days on any order they might receive. Furthermore they had to buy stock in unsorted and ungraded lots. This method of purchasing, besides requiring considerable capital, loaded upon them a large quantity of horn often entirely unsuited to their particular needs. Stephen Tisdale, being thoroughly versed in the horn industry, realized the benefit that a concern which would sort, grade, press and have ready for immediate delivery the stock desired, would be to every comb-maker. Accordingly, in 1891, in company with several others, he was one of the organizers of The Horn and Supply Company. The other members

of the firm were F. A. Clapp, president, and Albert A. Tisdale, Stephen Tisdale's son, secretary and treasurer. The above two, with George E. Rogers of Greenfield, Massachusetts, composed the board of directors. Like all innovations, this company had to fight against the prejudice of many who, not appreciating its value to the industry, feared a monopoly and exorbitant prices. However, a few comb-makers availed themselves of the opportunity it afforded them. They received stock of such unvarying excellence at a lower price than they had formerly paid and such efficient service that they were not only able to fill orders several weeks in advance of their competitors, but also improved their product. These obvious benefits could not be disregarded, and in a short time The Horn and Supply Company had won the confidence of all comb-makers. Today, under the management of its owner, Albert A. Tisdale, it continues its service to all manufacturers of horn goods and maintains the same high standard set for it by its founders.

Stephen Tisdale was also the first to jig-saw back combs by power and the first to cut open work on a single and double split mandril machine. His death in 1906 was an inestimable loss to the community of which he had been an honored member and to the industry to which he had devoted his life. To men of Stephen Tisdale's stamina Leominster owes much of its present prosperity.

Albert A. Tisdale, son of Stephen A. Tisdale, was born in Leominster in 1857. He received his commercial education at Comers College, Boston. For a number of years he worked for the Union Comb Company. When that business was discontinued, he became a member of S. A. Tisdale and Company and afterwards of A. A. Tisdale and Company. The former firm was noted for the manufacture of high-grade combs and the latter for fine reed goods. In 1891 he was one of the organizers of The Horn and Supply Company, of which he was treasurer until 1916 when he became sole owner of the business. It was at this time that Bernard W. Doyle and Alexander S. Paton, both members and officers of the firm, withdrew—Doyle because of his increased duties as treasurer of The Viscoloid Company and Paton because of ill-health. Albert Tisdale continues to conduct the business under the original firm name of The Horn and Supply Company. Tisdale is also president of the Whitney Reed Corporation.

Edward B. Kingman, prominent comb manufacturer of Leominster, was born on July 23, 1862, in North Attleboro, Massachusetts. Upon the completion of his education in 1880, he went to New York to accept a position in the New York office of Joslin and Williams, a Leominster firm noted for the manufacture of fancy horn combs and novelties. A

ORIGINAL SHOP OF UNION COMB COMPANY, LEOMINSTER

SHOP OF UNION COMB COMPANY, LEOMINSTER
Many well-known comb-makers of Leominster are in this group

INTERIOR OF THE HORN AND SUPPLY COMPANY SHOP

Showing caldrons, presses and vats for the preparation of horn stock

few years later Williams purchased Joslin's interest in the business. Williams, wishing to retire, sold the business on November 1, 1888, to Edward Kingman, who continued to conduct it for many years under the name of E. B. Kingman and Company. The new concern also manufactured fancy horn combs and maintained a high standard. In February, 1914, Edward Kingman incorporated the business as the E. B. Kingman Company, including Charles H. Howe, Thomas C. Howe and Harry P. Howe. The company now manufactures celluloid combs, hairpins, tatting shuttles, knitting needles and novelties. Its New York office at 41 Union Square West is in charge of Harry P. Howe. Edward Kingman manufactured horn goods for fifteen years in the Joslin and Williams building on Water Street, Leominster. At the time of the transition from horn to celluloid, which was taking place between 1895 and 1900, he gradually introduced a high-grade line of celluloid products. In 1903 he moved his business to the corner of Spruce and First Streets, where he had erected a three-story, fireproof building equipped with every modern facility for the manufacture of articles from celluloid. In 1913 he sold this factory and purchased the Williams and Winn plant on Exchange Street, which increased his capacity to meet the extensive requirements of the business.

SHOP OF THE HORN AND SUPPLY COMPANY, LEOMINSTER

Edward B. Tilton and George H. Cook, under the name of Tilton and Cook, began the manufacture of horn combs and novelties in the spring of 1878. They occupied a room 30 x 40 feet square in the present location of the company. In 1905 Edward B. Tilton, George H. Cook and Horace F. Cook incorporated Tilton and Cook Co. with a capitalization of \$25,000. The officers elected at this time were Edward B. Tilton, president; George Cook, treasurer; and Horace F. Cook, clerk. Horace Cook succeeded George H. Cook, who retired in 1913, as treasurer. Edward B. Tilton withdrew five years later and Marvin W. Sherwin succeeded him as president. Both Edward Tilton and George Cook retain financial interests in the corporation. In 1923 the capital stock of Tilton and Cook Co. was increased to \$100,000. The officers of the corporation on January 1, 1924, were: Marvin W. Sherwin, president; Horace F. Cook, treasurer; and Frederick H. Cook, clerk. The mill property where the firm was originally located was purchased by Tilton and Cook in 1902. Since then the mill privilege has been improved and buildings enlarged to meet the requirements of the business.

Tilton and Cook was the first company to use hydraulic pressure for clarifying horn. In 1894 or 1895 two hydraulic presses were made under

the direction of George Cook and from suggestions furnished by him. These presses operated successfully and remained unchanged in construction except for an increase in the power which necessitated strengthening and enlarging some of the parts affected. This type of press replaced the old screw press run by power on a system of belts and gears and was in operation in the plant of Tilton and Cook until that firm adopted the plan of buying horn stock that had already been pressed and clarified. The presses owned by the company were then sold to F. A. Clapp and Company of Leominster, who used them in manufacturing pressed horn stock. Presses which are constructed according to the same plan are in use in comb shops all over the country today. This concern has continued to maintain a high standard in the manufacture of combs. George H. Cook is a descendant of Robert Cook, probably the earliest comb-maker in America.

A well-known comb concern established in Leominster in 1892 was the Union Manufacturing Company. Several times during its career it was compelled to enlarge its plant, which was equipped with the most modern comb-making machinery. This company was incorporated in 1894 with the following officers: F. E. Edgerly, president; J. Q. Edgerly, secretary and treasurer; G. W. Edgerly, general manager.

Haldie Nicholson, one of the best-informed men on the horn situation in this country, came to Leominster from Sheffield, England, over thirty years ago. He came from a family of horn dealers, his ancestors having been for years engaged in the business. Nicholson grew up in the industry and was thoroughly versed in the English method of the preparation of horn stock, as well as an expert in judging horn before he came to this country. Although a most successful horn dealer under the American method, Mr. Nicholson today speaks of the superiority of the English treatment of horn whereby the horn, after being properly cut, is placed in a vise already heated to the proper degree and allowed to cool. When taken from the vise, it is already patterned as desired and, in the case of a comb, ready for the teeth to be cut. The English method is all done by hand and Mr. Nicholson estimates that whereas, fifty years ago about three thousand vises were in operation, today there are scarcely a thousand in use. This method of placing the horn in a vise already heated and allowing it to cool results in a toughness not found in horn treated according to the method in use in this country and described in this book. However, as the labor is all by hand, modern business demands the more efficient American method. Nicholson's knowledge of horns soon led to his success as a horn dealer in Leominster, the seat of the horn comb industry in this country, where, a few months after his arrival, he established himself in

PROMINENT LEOMINSTER COMB-MAKERS

1 THURSTON RICHARDSON 2 FRANK H. COOK 3 C. E. GOULD 4 J. A. STOWELL 5 HERBERT
PREVEAR 6 P. H. KILLELEA 7 JOHN Q. EDGERLY 8 FRANK E. EDGERLY 9 GEORGE W. EDGERLY

business under the firm name, Haldie Nicholson. Mr. Nicholson has always specialized in horn tips for the cutlery trade in England.

On November 1, 1886, the firm of Tenney and Porter, composed of C. H. Tenney and C. H. Porter, began business. Tenney was the son of Gilman Tenney and had learned comb-making from Jonas Colburn. He was at one time a member of Tenney, Kenan and Company, which manufactured horn goods. Previous to his affiliation with the latter firm he was a member of F. A. Clapp and Company, dealers in horn. Porter, previous to his connection with Tenney, had been a member of the firms Look, Tenney and Porter and F. A. Clapp and Company. Tenney and Porter is conducted today under the original firm name by George H. Porter.

The Bay State Comb Company was established in 1897 by Preston and Tisdale in a barn owned by Tisdale. The venture met with instant success and business increased so rapidly that larger quarters were soon necessary.

A. E. Newton and F. W. Osgood in 1892 successfully manufactured horn and celluloid combs, hairpins and novelties. The following year Arthur C. Merriman purchased F. W. Osgood's interest, and the firm of Newton and Merriman, which continued business for many years, was formed. Goodhue and Phillips, another old Leominster firm, produces a high grade of horn handles for knives, also dealing extensively in horn, which it buys in large quantities from the leading horn centers of the world. Other Leominster comb-makers of whom no record remains, were John Jonas, Abel Artemas, John Bowers and George W. Graves.

Sometime in the year 1880, Marshall W. Bailey, Albert L. and Frank A. Stearns of Leominster, went to Providence, Rhode Island, where they formed a partnership known as Bailey, Stearns and Company, and began the manufacture of horn combs and various other horn goods. In 1889 Bailey died, and the Stearns brothers continued the business until 1900, when Frank Stearns died. Albert Stearns conducted the business until 1916, his death marking the end of the horn industry in Providence.

One of the most successful of Leominster comb concerns is the Paton Manufacturing Company, which was established in 1879 for the manufacture of combs, buttons and jewelry. So prosperous has this firm been that many additions have been made to the original plant. Alexander S. Paton, the founder of the firm, was born in Dumbarton, Scotland, November 30, 1854. Coming to Leominster in 1871, he first found employment with the Union Comb Company and later with Jonas Colburn. In 1879 he established his own comb business in the upper story of a building

LEOMINSTER MEN PROMINENT IN THE COMB INDUSTRY
1 ALBERT A. TISDALE 2 GEORGE H. COOK 3 EDWARD F. BLODGETT

on Mechanic Street. The original firm name was Wilder, Paton and Metcalf, and, finally, the Paton Manufacturing Company. After the death of W. D. Somers, whose daughter Alexander Paton married, the business was moved to the Somers' shop on Central Street. In 1895 a fire destroyed the entire plant, but Alexander Paton, with characteristic energy, erected a second factory with facilities for almost doubling the output of the first. The business soon became one of the largest of its kind in Leominster and in 1897 was incorporated with a capital of \$50,000. Its officers were Alexander S. Paton, president; Bernard W. Doyle, treasurer; P. H. Watson, secretary. In 1897 Paton became president of The Horn and Supply Company, Bernard W. Doyle, also a member of the firm, being elected secretary at the same time. In 1901 Paton, in company with Bernard W. Doyle of Leominster, Ludwig Stross of New York, and Paul Rie of Paris, organized The Viscoloid Company of Leominster. Later, in company with the same men, he organized and became an officer in the Sterling Comb Company and the Harvard Novelty Company. These concerns are today a part of The Viscoloid Company, Inc., of Leominster, one of the largest comb manufacturing concerns in the world. Although Alexander S. Paton has practically retired from active business, he retains an interest in The Viscoloid Company, Inc., and is vice-president of the firm.

In addition to his success as a manufacturer Alexander Paton was an active, public-spirited and progressive citizen, serving the town many years as selectman and several terms in the Legislature. He was also one of the builders of the street railway through Leominster, acting as president of the Clinton and Worcester Railway Company.

Ludwig Stross, one of the founders of The Viscoloid Company, Inc., of Leominster, has been, for many years, a member of the firm of Albert Ochsé and Company, the largest horn dealers in the world. This company first established a direct connection with the comb trade in Leominster in the early nineties when Alexander S. Paton, also one of the founders of The Viscoloid Company, Inc., became their sales agent. In the later nineties it became evident that, owing to the steadily increasing practice of dehorning cattle, the supply of horns would soon be inadequate to meet demands. Albert Ochsé and Company experimented with European horns which, with the exception of small quantities of English and Australian stock, were found unsuitable. South America next received this company's attention. Here they found an abundance of excellent horns. In the later nineties Mr. Paul Rie established agencies throughout the Argentine and Uruguay. Although Scotland and Germany carry on the largest

PLANT OF THE VISCOLOID COMPANY, INC., LEOMINSTER, MASSACHUSETTS

export trade in the world, France excels both in quality production of horn combs. The horn for these combs is heated, but not clarified. In South America, especially in Rio and Santos, numerous comb factories which use large quantities of Brazilian horns have sprung up. Since the middle of the last century this firm has done business in France under the firm name of Albert Ochsé Company, now Paul Rie et Fils, Paris, France.

Bernard W. Doyle, president and treasurer of The Viscoloid Company, Inc., was born in Leominster, October 29, 1873. He attended the public schools of that city and was graduated from the Leominster High School in 1891. The following year he attended the Eastman Commercial College at Poughkeepsie, New York. Upon the completion of his course he returned to Leominster, where he became identified with The Horn and Supply Company. Upon the retirement of F. A. Clapp from this concern in 1897, Bernard Doyle became secretary and manager of the company, serving in these capacities for approximately twenty years. Acquiring a thorough knowledge of horns as buyer for this company he traveled extensively in this country and abroad in the horn interests. About 1898, when the dehorning of cattle reached a critical situation, Bernard Doyle, realizing the steady decrease in the supply of horn and the growing popularity of celluloid, made an investigation of this pyroxylin plastic compound which, at that time, was just beginning to be used as a substitute for horn in the manufacture of hair ornaments.

As a result of this investigation, he, together with Alexander S. Paton of Leominster, Ludwig Stross of New York and Paul Rie of Paris founded, in 1901, The Viscoloid Company of Leominster. Later, with the same men, he organized the Sterling Comb Company and the Harvard Novelty Company. These concerns, with the Paton Manufacturing Company, were later consolidated into one organization, The Viscoloid Company, which eventually became The Viscoloid Company, Inc., the present company. The officers of The Viscoloid Company, Inc., are Bernard W. Doyle, president and treasurer; Alexander S. Paton, vice-president; Ludwig Stross, vice-president, and Daniel J. Reagan, secretary.

The Viscoloid Company, Inc., comprises a plant of over forty acres and sixty-two buildings, manufacturing a plastic compound of pyroxylin under the trade name, Viscoloid. It is made in sheets, rods, tubes and various other forms, in imitation of horn, tortoise shell, ivory, amber and many other natural products. From its own raw material it manufactures dressing combs, hairpins and hair ornaments, viscoloid toys, brushes, mirrors, toilet articles and innumerable other articles used in daily life.

GROUP OF LEONINSTER COMB SHOPS

- 1 Paton Manufacturing Company
- 2 B. F. Blodgett and Company
- 3 Damon Company
- 4 W. D. Earl and Company

The company, however, has always specialized in the manufacture of combs, hairpins, hair ornaments and toys. This company is today the largest manufacturer of combs, hairpins, hair ornaments and viscoloid toys in America, and probably in the world.

Bernard W. Doyle at various times has been identified directly and indirectly with a great many comb manufacturing plants as well as several other industries in Leominster. Although never holding public office, he has always taken an active interest in the affairs of Leominster. He was one of the founders and organizers of the Merchants National Bank of Leominster and has been a director in the Safety Fund National Bank of Fitchburg for many years. Bernard W. Doyle is president of the Leominster Hospital Association and was one of the prime movers in obtaining a new hospital for the city of Leominster.

The Pacific Novelty Company, founded by Joseph Gutman on May 2, 1891, first established connections with the comb industry of Leominster through Alexander S. Paton. Under the capable management of Joseph Gutman and Julius Kahn, secretary of the company, this concern has contributed not only to the growth of Leominster's comb industry, but has played no small part in the development of the comb and celluloid industry throughout the country.

For forty or fifty years after the comb industry began in Leominster, there was constant communication between Leominster and West Newbury. Improved methods of comb-making were interchanged by the inhabitants of the two towns, but the progress made was in no way unusual. Most of the ideas were but slight variations of former processes. Yet the comb-maker derived pleasure from telling his neighbor a more efficient way of working, much as his wife enjoyed exchanging recipes for pie or cake. The growth of the industry was slow until after the invention of the Iron Screw Press in 1818. Before then about twenty people were employed in the manufacture of combs in Leominster, but the number of shops rapidly increased and the returns of the Assessors to the Secretary of the State in the year 1845 show that twenty-four factories were in operation, giving employment to one hundred and forty-six. These returns place the value of the combs made at \$77,400 and the capital invested at \$22,000, —undoubtedly a low valuation, as not less than \$100,000 worth of combs was being made annually at the time. The same report states that in 1845 more than one-third of the comb-making in the entire State of Massachusetts was in Leominster. In that year the aggregate amount of comb manufacturing in the state was as follows: Number of shops, 71; persons employed, 340; value of combs made, \$198,965; capital employed, \$73,100.

LEOMINSTER MEN PROMINENT IN THE COMB INDUSTRY

1 CHARLES H. HOWE 2 EDWARD B. KINGMAN 3 GEORGE R. DAMON

The following table shows the amount of manufacturing in 1845 in the separate towns:

<i>Town</i>	<i>Number of Shops</i>	<i>Number Employed</i>	<i>Value</i>	<i>Capital</i>
Leominster	24	146	\$77,400	\$22,000
West Newbury	25	86	70,700	22,575
Lancaster	5	32	16,200	9,800
Northborough	3	26	15,000	6,700
Holliston	1	20	10,000	8,000
Bolton	1	3	1,200	700
Haverhill	3	12	3,760	550
Boston	1	2	1,500	1,050
Tyringham	2	4	1,000	900
Pittsfield	1	1	83	25
Amesbury	1	1	300	100
Conway	1	3	800	400
Salisbury	1	2	522	300
Attleborough	2	2	500	
14 Towns	71	340	\$198,965	\$73,100

Judging from this table it would appear that the Assessors in most of the towns did not consider real estate, machinery, tools, etc., as capital. The above statistics are doubly interesting in that they mark the beginning of the decline of the comb industry in West Newbury and its growth in Leominster. It will be noted that the value of the combs manufactured in each of these towns surpasses the total value of those manufactured in the other eleven. The following statistics for the year 1852 give evidence of the growth of Leominster's comb-making: Number of shops or factories, 28; number of firms or companies, 28; individual head comb-makers, 44; persons employed, males, 264, females, 50; persons engaged in business, 358; value of combs made annually, \$270,000; capital employed, \$85,000; real estate, machinery, tools, etc., \$55,000. (The cash or credit necessary to carry on the business, after the shops, machinery, tools, etc., are in readiness, is alone regarded as capital.)

A newspaper of this time states that two-thirds of the combs manufactured in the United States were made in Leominster. The statistics presented are surprisingly large for a town of Leominster's size and easily place it foremost in the comb-making industry. Fancy combs such as "Side Tuck and Pocket Combs" constituted the chief part of the manufacture in 1852. Raw-horn pocket combs were made to some extent and the manufacture of tortoise-shell combs had commenced. The average

FOUNDERS OF THE VISCOLOID COMPANY, INC., OF LEOMINSTER
1 ALEXANDER S. PATON 2 BERNARD W. DOYLE 3 LUDWIG STROSS 4 PAUL RIE

OFFICERS OF THE PACIFIC NOVELTY COMPANY OF NEW YORK

1 JULIUS KAHN, Secretary

2 JOSEPH GUTMAN, President

comb-maker received one dollar for a ten-hour day, but the more expert, by spending from twelve to fifteen hours on piecework, often doubled that sum. Women were allowed three dollars a week. Both men and women paid board out of their wages; the men, \$2.25 weekly, and the women, \$1.50.

The comb-making industry was always fluctuating in prosperity, particularly in the days of its early development, but those who persisted in it for a number of years and managed their business carefully generally realized between ten and twenty per cent. in profits. Whether or not comb-making was profitable for the individual, it was always a source of much wealth for the community. Leominster has long held an enviable place for industry, thrift, and general intelligence; in fact, it has been called the "model town of Worcester County."

A GROUP OF LEOMINSTER SHOPS

1 E. B. Kingman Company 2 Tilton and Cook Company 3 Old Kingman and Company shop now part of
 Cluett Peabody and Company 4 Old home of F. H. Cook and Co.

CHAPTER VII

Comb Making in Clinton, Massachusetts, and Other Industrial Centers

NATHANIEL LOWE, first comb-maker in Clinton, was descended from a hardy old sea-captain, also named Nathaniel Lowe, who in 1742 put to sea from Ipswich, was captured by the French on May 10, 1742, and never returned to America. His son, Nathaniel Lowe of Leominster, the father of Nathaniel and John Lowe, was born in 1732. In 1795 Nathaniel, Jr., then thirty-one years old and already established in the comb business in Leominster, bought of Moses Sawyer the land east, northeast and southeast of Prescott Mills. This farm of sixty-seven acres covered the southern portion of the Plain, and the greater part of the land between what is now Walnut Street and South Meadow Brook to the base of Burdett Hill. Whether Lowe moved to Clinton at the time of his purchase is not definitely known, but the registry of his daughter Polly's birth in 1798 appears in Clinton records. In one of Nathaniel Lowe's deeds he is mentioned as a cooper, although it is said he made most of his money by comb-making. In Clinton he divided his time between his farm and shoemaking. He came to Clinton before his brother John, who kept the toll-gate on the Haverhill and Amesbury Turnpike, but the honor of introducing the comb business in Leominster is given to the latter because of Nathaniel's procrastination in establishing the industry. It was after 1808 that the shop which Nathaniel Lowe built, northeast of the present intersection of High and Water Streets, was used for comb-making. At that time his cousin, Jabez Lowe, was working with him at the trade. Nathaniel Lowe's family consisted of six sons and three daughters. As four children died and the other five moved West, his farm and house, which stood near his shop, passed out of the family in 1829, two years after his death.

Courtesy Leominster Historical Society, and Holder Memorial, Clinton

GROUP OF CARVED BACK-COMBS

In 1800 John Lowe bought of John Frye of Bolton, land previously owned by Jonathan Prescott and Amos Allen, and known as the Burdett-Maynard farm, on the southeast side of Main Street just above the upper Worsted Mill. He extended his property four years later by purchasing forty acres upon which were the unfinished house of Benjamin Gould and the nail shop of Asahel Tower. In the same year he also acquired land on the road from Prescott's Mills to Sandy Pond.

While in Leominster, John Lowe married Mary Burdett, by whom he had one son, Henry, and about 1807 he built the house where his son-in-law, Enoch K. Gibbs, later lived. His own shop, which stood northwest of his house, has long since been transformed into a dwelling. When John Lowe established the trade, little machinery had been invented, and the process was the same as that followed in West Newbury and Leominster. But Clinton kept pace with the neighboring towns, purchasing every improved machine that came on the market. John Lowe died in 1851 at the age of seventy-nine. He had six daughters and three sons. Henry, the eldest, who was born February 3, 1801, and Thomas, son of Nathaniel Lowe, bought a water privilege on Rigby Brook in 1823, and began the manufacture of combs in the "upper shops" which they built. Not succeeding in the business, they soon sold to Henry Lewis, who in 1836 sold to Haskell McCollom, a son-in-law of John Lowe. McCollom bought another water right of John Lowe and, with Anson Lowe as partner, built what was known as the "middle shop." He so increased the business that soon the district round his shops, formerly known as Scrabble Hollow, was called McCollomville.

Four years later Enoch K. Gibbs, who had married Martha Lowe, a daughter of John Lowe, built the "lower shops." James S. Lawrence and Charles Miller were sons-in-law of John Lowe, and followed his trade, as did his grandsons, until after the incorporation of Clinton, although by that time the "middle" and "upper shops" had passed into the hands of A. L. Fuller. Many years later the two "upper shops" were owned by N. C. Munson of Shirley and Charles Frazer. These shops, with the "lower shops," which the Lowe family had retained, were destroyed in 1876 when the dam at Mossy Pond gave way.

Albert Lowe, one of the Lowes who were washed out of the Scrabble Hollow district at this time, rented the upper floor in the back part of A. L. Fuller's mill. In his employ were his brother George, his nephew Albert, George Lowe and Frank Lewis. A workman by the name of Barry pressed horns for him. Lowe remained in the horn comb business until 1906 or 1907 when he retired. William Fuller, son of A. L. Fuller,

became well acquainted with Lowe during the last five or six years he was in business and speaks of him today as one of the finest men he has ever met. Albert Lowe died during the year 1909.

Across the way from the Lowe shop the neighboring water privilege on South Meadow Brook, which belonged to Moses Emerson, was also utilized for comb-making. In 1822 Emerson died, and three years later it was bought by George Howard of Bridgewater from the guardian of the Emerson children. Howard constructed a new dam and built a fairly good-sized shop and dwelling-house, all of which he rented to Levi Pollard and Joel Sawtell, who made combs for a number of years; but as the business did not prosper they sold it to George Howard, who conducted it with profit. In 1839 Howard sold his shop to Ephraim Fuller.

A name destined to be prominent in the comb industry as well as in other Clinton enterprises was that of the Burdett family. Three of the eleven children of John Burdett of Malden and Leominster settled in Clinton before it had received its name. They were Mary, who became the wife of John Lowe; John, born in Leominster in 1777; and Nathan, born in Leominster in 1788. As soon as Nathan was old enough to learn a trade, about 1808 or before, he was apprenticed to his brother-in-law, John Lowe, with whom he boarded in his new house on Rigby Brook. Contrary to the custom, young Nathan was not bound by legal papers to work only in the shop, but helped in the care of the farm as well. He must have learned comb-making quickly, for within a few years we find him conducting his own shop and having for his own apprentices the two older sons of Daniel Harris, who lived on Water Street opposite Cedar Street. In 1809 Nathan Burdett married Margaret Darling and bought the Ezekiel Rice house on Main Street. To this property he added, in 1825, twenty-five adjoining acres which he purchased from Captain Thomas W. Lyon. Across the road from his house he bought a shop of two small rooms, where he began the manufacture of combs. In 1820 he discontinued the business to work as a teamster for Poignard and Plant, but soon returned to comb-making, which he continued for about twelve years. He often had as many as four apprentices or journeymen working for him at one time. Among them were Emery Lewis, Charles Copeland, Henry Lowe, Eben Pratt and Phineas Burdett—names which became prominent in the comb industry in later years. His sons, too, learned the trade from him. Burdett specialized in pocket combs, making about twenty-four dozen a day. Samuel Dorison (or Dollison) did the heavy work in the shop. Sally Trecker and the girls of the household cleaned and packed the combs, as was usual in most comb-makers' families.

Courtesy Holder Memorial, Clinton

PROMINENT COMB-MAKERS OF CLINTON

1 EDWIN A. HARRIS 2 SIDNEY HARRIS 3 GEORGE S. HARRIS

Although comb-making in Clinton and the surrounding towns was established by John Lowe at an early date and carried on as an adjunct to farming for many years, it owes its final development to the Harris family. In fact, if one asks in Clinton today about the comb industry, he will invariably be told of the "Harris Clan." Daniel Harris, father of the three Harris brothers, to whom the comb industry owes much, lived at the old Hunt place on Water Street. Emory, his eldest son, born in 1788, learned the comb business from Nathaniel Lowe. Although successful, he could never make up his mind to devote himself exclusively to it, preferring to give the greater part of his time to his large and profitable farm. Asahel Harris, second son of Daniel Harris, on the contrary, directed his attention solely to comb-making. In 1817, on land purchased of Samuel Dorrisson, east of the river, he built a house and several shops where he carried on the industry with good returns. In 1826 he rented his house and shops to Jonas B. White, who conducted the comb business for two years. Meanwhile Asahel Harris erected a brick building between his father's house and his brother Emory's. He also built a number of small shops and began manufacturing combs by horsepower. In 1828 the lands and house on the east side of the river were sold to his younger brother, Sidney, born in 1804. A few years later Sidney and Asahel built a dam,

*Courtesy Holder Memorial, Clinton***FULLER'S MILL, 1867, CLINTON**

In the second story of this mill, Albert Lowe made horn combs from 1876 to 1907

sharing equally the expenses and the water privilege. In 1834 Asahel Harris met with reverses and Sidney purchased his shops and water right for \$400. After the death of his father and brother Emory, Asahel took charge of the estate but soon transferred it to Levi Harris, who had married his niece.

Asahel Harris, known as Captain Harris from his position as commander of the Lancaster Light Infantry in 1823, died in 1844. Sidney Harris grew up in the comb industry, for the comb shops of his brothers Emory and Asahel served as his playground. At the age of twenty-one he established himself in business and began cutting out combs on a machine belonging to Gardner Pollard. Although never in partnership with either of his brothers, he often made combs for them and they for him. In 1828, according to his old account books, he had become equally prosperous as a comb-maker and bought from his father and his brother Asahel the homestead east of the river. He married Sally Kilburn of Lancaster in 1829. From 1828 to 1830 his comb business was conducted in a new shop near his home.

David Hale Fanning, president of the Royal Worcester Corset Com-

Courtesy Holder Memorial, Clinton

SIDNEY HARRIS' COMB MANUFACTORY, CLINTON

pany, who is in his ninety-fourth year, remembers vividly the fire which about 1850 destroyed the Harris Comb Shop. At the time, Fanning was employed in Bigelow's Coach Lace Mill at Clinton and was also a member of Torrent Engine No. 1. The fire broke out late at night, and Fanning, who was forced to plough his way through snow piled knee high, arrived at the fire about half an hour late. Finding the fire still blazing, he immediately took his place at the engine and did all he could with the old hand pump to help extinguish the blaze. Although every effort was made to save the building, it burned to the ground. Fanning, although well advanced in years, has a mind that is as sharp and retentive as a dry-plate and perfectly recalls the Sons of Temperance Hall which "Sid" Harris, as he was called, erected in support of his lifelong principles as a temperance advocate.

Another incident related to the comb industry which the president of the Royal Worcester Corset Company recalls, occurred during the Civil War time, when the price of whalebone soared to a prohibitive figure. Fanning, learning the possibilities of horn as a substitute for whalebone, purchased some, which he cut into corset stays. A Western customer upon the receipt of an order of corsets made with these stays wrote a caustic

letter to Fanning, inquiring if he used horn for corset stays. "Under the circumstances, certainly," replied Fanning. "I can't get any whalebone. If there is anything unsatisfactory about those corsets, return them to us and we will pay the shipping charges both ways." Fanning heard nothing further from the customer. Some time later one of his salesmen called upon the customer and learned that only a few had been broken, due to the horn passing through a cold spell in transit and becoming brittle. The customer told Fanning's representative that owing to Fanning's liberal offer he would not think of returning them.

The numerous employees at the shops of Sidney Harris and Sons included Joel Sawtell and Theodore McNeil, two men who were most prominent in Clinton affairs. Joel Sawtell was born in Boylston, Massachusetts, in 1809. As a young man he worked for Nathaniel Lowe and in all probability learned the comb trade from him. Later he worked for Emory Harris for several years. From 1829 to 1837 he was in business for himself, and it is supposed that at one time he entered into a partnership with Sidney Harris. During the last years of his life, until his death in 1887, he was employed at the Harris Comb Shops.

Comb-making, although it held for half a century a most important place among the industries of this section, declined steadily after the death of Sidney Harris. Today, Clinton, like West Newbury and Lancaster, has not one comb shop within her limits, while Leominster, their neighbor, has so prospered in the industry that she seems to have absorbed the comb business of the country.

Strange to say, it was also a Low of Leominster, although unlike the founder of the industry in Clinton he spelled his name without an "e," who in company with Levi Cook of New York City, in 1828, established the comb industry in Wappingers Falls, New York. Cook was the instigator of the enterprise and, with the promise of financing the affair, induced Emory Low to abandon his business in Leominster to establish a new concern in Wappingers Falls. The Independent Comb Company, as their business was called, was first located on the middle floor of a building erected by Benjamin Clapp on the site of the Franklindale Cotton Mill. Later it was moved into a new building erected on the same site.

In 1836 Eleazer D. Sweet, I. T. Nichols and James Shields succeeded Cook and Low and continued to conduct the comb business under the name of Sweet, Nichols and Shields. In 1844 they moved it to a new wooden building which they had built for that purpose. Four years later they sold their factory to the Clinton Cotton Mill and moved to the upper story of a building erected by the Franklindale Cotton Company that same year.

PROMINENT COMB-MAKERS

1 WILLIAM S. BECHTOLD

3 JOHN WALTON

6 SAMUEL MCCLURE

4 JACOB A. WALTON

2 ELIAS BROWN

5 WILLIAM H. WALTON

7 SAMUEL GIBSON

In the lower story Henry Hughson operated a gristmill. The firm of Nichols, Sweet and Shields discontinued its comb business in 1854 and sold the establishment to Elias Brown, one of its employees, Abel Gray, Thomas Stevenson and John Barlew, who moved the industry to an island back of the Clinton Cotton Company, where they rented a building owned by the Franklindale Cotton Company. The building they had previously occupied became the dye mill of the Duchess Print Works. The firm continued to do a prosperous business until 1855 when, because of unfavorable conditions, Sweet and Shields sold their interests to Elias Brown and entered the grocery business. In 1861 Brown became the partner of I. T. Nichols, and the firm of Nichols and Brown continued to carry on the comb business. At this time they were manufacturing horn and rubber combs, pipe stems, bicycle handles, etc. Brown and Nichols remained in business until 1864, when Elias Brown purchased Nichols' interest. Three years later Brown moved the comb business from the island to a new building which he had erected that same year on the corner of Prospect and Market Streets.

It was at this time, at the height of his prosperity, that Elias Brown was to meet with his greatest misfortune. About three o'clock on Sunday morning, January 26, 1868, just four months after the erection of his new building, it was totally destroyed by fire at a loss of from \$15,000 to \$20,000. An article which appeared in the Poughkeepsie *Daily Eagle* a few days later voiced the general concern by saying that thirty-five or forty persons would suffer from lack of employment for some time to come. The situation was acute and although Elias Brown was in no way responsible, realizing what it meant to his employees, he bent all his energies to the erection of a new building. It was due to his personal interest and untiring efforts that within four weeks a new building was erected and a new plant in operation.

In 1866 and 1868 patents were granted to Elias Brown and C. Foster, an employee of Brown's, for the "manufacture of combs." Later in 1868 other patent papers were issued to Foster for the invention of a "die for cutting metallic comb teeth" and for an "enamelled metallic comb." Elias Brown, aside from his interest in the comb business, also took an active part in town affairs, holding at different times the positions of supervisor, postmaster, and president of Wappingers Falls. Born in Ireland, he came to Wappingers Falls in 1840. In 1854 he married Esther Taylor of England, by whom he had several children. Brown died in 1888 and his business was continued by his sons until 1890 or 1892. Their retirement from business marked the close of the Brown and Sons Comb Company and the end of the industry in Wappingers Falls.

OLD COMB SHOP OF ELIAS BROWN, WAPPINGERS FALLS, NEW YORK

The first comb shop in Northboro, Massachusetts, was erected in 1839, by Wilder Bush and Josiah Haynes. They purchased from Lowell Holbrook twenty-five acres of land on both sides of Whitney Street, where they erected, in addition to their comb shop, several storehouses near the site of Brigham's first sawmill. Not a building remains today. In the Toad Mill, as one of their buildings was commonly known, they polished and rubbed all their combs. This building was later used for the same purpose by McClure and Parker, another old-time comb-making establishment. Warren T. Bush, brother of Wilder Bush, owned a comb shop on Hudson Street.

Very soon after the establishment of the first comb factory, several other smaller shops were erected, but it was 1853 before the next comb factory of any size or importance came into operation. This factory was owned by Nathaniel Fisher and operated by him until 1859, when he sold it to Milo Hildreth. Hildreth in company with his two brothers continued to conduct their comb business in the old Fisher factory until 1860, when it burned and they were forced to move their industry to what was known as the "Clothier's Mill Shop" of Samuel and Abraham Wood

on Main Street. Here they continued to make a high grade of horn dressing and fancy combs until 1893 when the two brothers died within a few weeks of each other.

The Hildreth shop served as a school for many of Northboro's prominent comb-makers. N. C. Whitaker, a prominent authority on tortoise shell today, was at one time employed in the Hildreth shop. After leaving Hildreth's employ, Whitaker, in company with Yates and Cane, established a comb shop. This firm worked both horn and tortoise shell into combs. Some years later Whitaker sold his interest to Yates. For the past thirty years Whitaker has been in business for himself and is one of the foremost representatives of the tortoise-shell industry in America. In his establishment on Temple Place, Boston, one finds a complete and exquisitely beautiful display of tortoise-shell combs and novelties. Some of the largest jewelry concerns in this country consult Whitaker before purchasing genuine tortoise shell.

A brother of Mrs. Wilder Bush, Samuel Gibson, established a comb shop just below Cold Harbor Bridge. At various times combs were made in the Wesson Rifle Factory, in the Glazier Mill on Cold Harbor Brook and in the old barn shop north of the town hall. In the latter shop Josiah Proctor made horn buttons. Woodbury, Woodward, Gallup, Eames and Lock were prominent names in Northboro's early comb history.

The last comb shop to discontinue business was the one conducted by Walter M. Farwell. Farwell's factory was the largest in town, employing as many persons as were employed at one time in all other Northboro shops. Farwell manufactured horn and shell dressing and fancy combs and with the introduction of celluloid, cheap celluloid combs. With Walter M. Farwell's death, in or about 1914, his business was discontinued.

One of the most interesting records of the comb industry in the early half of the nineteenth century is the "American Advertising Directory for Manufacturers and Dealers in American Goods" published in 1831. It cites the United States tariff rates on combs for that year as: horn, fifteen per cent. of valuation; lead, copper and brass, twenty-five per cent.; wood, thirty per cent. For the same year there are the following names of comb manufacturers in the United States: Freedom Hart of Berlin, Connecticut; John H. Whiting of Bridgeport, Connecticut; I. A. and L. M. Comstock, Alfred Griswold and Henry C. Sanford of Essex, Connecticut; W. Batsford and Company, E. C. Birdsey and Company, Howard, Pratt and Company and L. Merriman and Company of Meriden, Connecticut; Jared Hurlbut of Middle Haddam, Connecticut; Ralph Hill and William Hill of Wallingford, Connecticut; James Low of Louisville, Kentucky;

COMB SHOP OF MILO HILDRETH, NORTHBORO

Meichel De Young of Baltimore, Maryland; William Swift of Boston, Massachusetts; S. W. Sherman and Company of Buffalo, New York; Giles Bushnell, Levi Cook and Company, Reuben Munson, Ferdinand L. Wilsey and James Wortherspoon of New York City, New York; William B. Fairchild, George H. Miller, William Oakford, Samuel Simpson and John Yard, Jr. of Philadelphia, Pennsylvania; Peter V. S. Voorhis of Pittsburgh, Pennsylvania; and Oren Claflen and Company of Providence, Rhode Island.

Jacob W. Walton Sons was established in Wheat Sheaf Lane near Philadelphia about 1853. About 1842 or 1843 Jacob W. Walton, its founder, then a boy, worked during spare moments in the comb factory of S. C. Noyes and Company in West Newbury. He lived at that time on the estate of Benjamin Poor, but three or four years later his parents moved to Pennsylvania, taking the New England route to New London, from which city they sailed for New York on the steamship "Atlantic." The vessel was wrecked in the night, and Jacob Walton was the only one of the family who survived. After many days in a hospital at New London he returned to West Newbury, where he lived for a year in the home of William Noyes, father of William H. and Davis F. Noyes, and worked

OLD "TOAD MILL," NORTHBORO

Here Bush and Haynes, earliest comb-makers in Northboro, polished their combs

in Noyes' machine shop on machinery for comb-making and other purposes. The following year he was apprenticed to S. C. Noyes and Company where he remained until he was twenty-one years of age. With his thorough knowledge of comb-making he was eager to start in business for himself and moved to Newark, New Jersey, where he believed conditions favorable for the establishment of a comb factory. There he rented a small room which he fitted up as a shop, but a delay in the arrival of machinery which he had ordered from West Newbury compelled him to find an outside firm to do some of his work. He finally decided to send it to David E. Noyes and Brothers. As the company was exceedingly busy at the time, David Noyes urged Walton to work as a journeyman in his factory. This he did until 1852 or 1853 when he went to Philadelphia where he joined Edward E. Warner in the manufacture of clear horn combs—a partnership which continued until the outbreak of the Civil War, when Warner, uncertain about the effect of the conflict on business, insisted upon selling. Temporarily out of an occupation, Jacob Walton began the manufacture and wholesale distribution of cigars, but two or three years later he had arranged with a factory in Wheat Sheaf Lane, near Philadelphia, to make

JACOB W. WALTON SONS' HORN COMB FACTORY, FRANKFORD, PHILADELPHIA

raw horn combs, and again became interested in comb-making. Warner joined him at the close of the war and a second partnership, under the name of Warner and Walton, was formed. In 1875 Edward Warner retired.

After 1876 Jacob Walton began taking his sons into his business, and eventually it was conducted by Jacob W. Walton Sons. The factory was moved in November, 1892, from Wheat Sheaf Lane, where it had been for over thirty years, to Ruan Street, Frankford, Philadelphia. At first it occupied only the first floor and basement of a building, but gradually developed until the firm purchased the entire property. Jacob W. Walton died in February, 1893. In 1904 the long, one-story press shop attached to the main factory of the company was completely destroyed by fire. The present building, consisting of four stories and a basement, was erected to take its place. Charles E. Walton retired from the business in 1913.

Nine years later William H. Walton died, and John Walton, the remaining member of the firm, admitted to partnership Robert R. Walton, son of William H. Walton, who remained in the business only a few months. John Walton continues to conduct the raw horn dressing-comb business, retaining the old firm name Jacob W. Walton Sons in memory of the founder of the company.

There are no longer any comb manufacturing plants in Pittsburgh, Pennsylvania; Baltimore, Maryland; or Middletown or Berlin, Connecticut. The Berlin Free Library now stands on the site of Freedom Hart's old comb shop, formerly Asahel Hart's tailor shop. Many years after Freedom Hart's death, a large number of old bone combs were found in the attic of his house which stood just south of his shop. As Freedom Hart was the only comb-maker in Berlin, its comb business ceased when he died. In Bridgeport, Connecticut, once a promising center of the comb industry, not a comb manufacturing plant remains today. Comb-making was established there by Moss K. Botsford, who purchased of Jesse Sterling a house on the north side of Gold Street at the head of Water Street. This business was very prosperous between the years 1830 and 1835. Owing to many periods of depression in the industry, there were a number of failures which resulted in its being discontinued in Bridgeport after a short time. Bethel and Newtown, among other Connecticut towns were once engaged in the making of combs.

The Providence Shell Works established in Providence, Rhode Island, in 1827, was started in a windmill which stood at the head of Constitution Hill. This business was later consolidated with the business of Harry E. Davis of Philadelphia, Pennsylvania. Davis had been engaged in the manufacture of tortoise-shell goods since 1833.

As far as can be ascertained, only one comb factory has ever been operated in Holliston. This shop, owned first by Houghton and Joslyn and later by Houghton and Daniels, was built in 1834 on Jar Brook. The business depression of 1837 caused a suspension of work for a season, but the next year it was again in operation, and was continued until January, 1860, when it was destroyed by fire. During its most prosperous years this firm's annual sales amounted to \$100,000. The factory used the water power furnished by Jar Brook and later steam power. Houghton and Joslyn also manufactured copper pumps about 1837, but sold this branch of the business in 1851 to S. Wilder and Company.

For a number of years a comb factory was located at the Silas Hoar place in Boxboro, Massachusetts. Comb-cases were made at East Weare, New Hampshire, by Reuben A. Smith and Charles H. Moore about 1870.

CHAPTER VIII

Horn, Tortoise Shell, Ivory and Their Substitutes

ALL products of man's ingenuity have their source in nature. From the mineral, vegetable or animal kingdom comes the raw material which mankind has fashioned into articles of utility or ornament. How man has changed by machinery the raw material into the manufactured product, is a story of romance, persistence, courage, and ingenuity. Without the supply of raw material, the machine age with its numberless inventions would have been impossible, and even today in many industries, especially in the comb industry, the method of preparing raw material is, in general, much the same as that which has been followed from the very beginning.

The early combs in this country were made of horn and tortoise shell. Today the comb factories that still use horn buy them from the large meat packing houses in car load lots. When an early comb-maker wished to buy horn he would saddle his horse and make a tour of the neighborhood, stopping at each farmhouse. Whatever horns the farmer might have collected were brought out, the best of them put in the saddlebags, and the search continued. Horn could be bought for a mere trifle, and three horns from a cow or steer were equivalent to one ox horn. Oliver Hills, nephew of Obadiah Hills, the first comb-maker in Leominster, writes that his father often bought many lots of stock and sold the tips which were not used in the manufacture of combs for other purposes at a price sufficiently high to pay for the original stock. Worcester, Massachusetts, was the center to which many of the early comb-makers resorted for their horn. This was due to the fact that prior to the Civil War a number of tanneries were located there.

Of the various kinds of horn, steer horn has always been considered best because of its size. Buffalo horns were at one time used for the manufacture of combs, but were not satisfactory because of being brittle, thick,

and hard to work. Cow horn, which is lighter and shorter than steer horn, and "cull" horn, which shows a decided twist, are less workable, while "crab" horn is so short and so twisted that it can be used for little else than knife handles. In Scotland and England, hoofs, as well as horn, furnish material for making combs, but in this country they are used largely in the manufacture of buttons. Although a patent was granted in 1809 to Robert Geddney of New York for the "manufacture of combs from hoofs of cattle," and another three years later to E. M. Canviss of Southington, Connecticut, for a method of "pressing and rendering transparent horsehoofs for making combs," American comb-makers have found them of little worth. Today most of the horn comes from the large meat-packing houses in the West, but it is often not of the best quality, as cattle bred for meat purposes are dehorned before their horns have become very large. South American, as well as Australian horn, is again coming into use in this country. Australian horn is small and light colored. It is better adapted for small wares such as buttons. South American and South African steer horn has always been considered the finest obtainable, as the cattle there roam the ranges unrestrained and thus grow perfect horns. As this horn is coarse grained and large, it is good for dressing combs. Today practically all South American horns go to England, where we, in turn, purchase them. England has also always imported great quantities of horn from the Cape of Good Hope and Russia.

Before any work can be done on horn, it must be seasoned and the pith removed. Otherwise it warps easily and is rendered useless for manufacturing purposes. The next task in the preparation of horn stock is sorting. That done, the horn is washed in vats of pure water. Tips and skulls are then sawed off and the horn split on a machine. The split horn is again graded, this time for thickness, before it is thrown into hot water from which it is taken at the end of five days and again immersed in hot water to reheat in preparation for an oil bath. It is next thrown for a few minutes into oil, sometimes a mineral oil, but more often a less expensive oil, such as paraffin, and heated. When removed it has become sufficiently pliable to be opened with a poker and a pair of tongs. It is then laid between iron blocks on which gauges, previously inserted, determine its final thickness. Hydraulic pressure is applied and the blocks, steam heated, if clarified horn is desired, come together slowly, pressing the horn between them. The sheets of horn are then taken out and placed between iron plates to keep the horn straight while cooling. When cool, they are sorted again for quality, as some, split and blistered by the pressing, must be marked as inferior. After the horn stock has been properly

graded, it is ready for shipment to the various button and comb factories where it is used. The principal difference between the old methods of preparing horn and the more recent ones lies in the improved tools that have been introduced. There is practically no waste of horn. The tips, after they have been sawed off, are graded, and from the smaller ones (from one and three-quarters to three and one-half inches long) pipe stems are made, whereas the larger are used for the handles of umbrellas, knives, or canes. The skulls are used for buttons and all waste is thrown into refuse sent back to the horn supply houses to be dried and ground up into "horn and hoof meal" that is sold by unit weight, determined by the units of ammonia it contains, to agricultural companies which make it into fertilizer.

Horn has been used for many centuries in the manufacture of a variety of products. At one time a large quantity was used to make drinking cups no thicker than a card. A nest of drinking cups was often made, ranging in capacity from a pint down to little more than an ounce. Bows also were made of horn, and Homer in Book IV of the "Iliad" describes the bow of Pandarus as consisting of two horns of a wild goat fastened together at the base and tipped with gold. Early Chinese bows were partly of wood and partly of buffalo horn; and West Indian bows were of horn and wood strapped together with a tendon. Although horn has been used as window glass, it never proved successful, as plates thin enough to be transparent would soon warp or be corroded by exposure to the weather. Another use for it was in a crude bugle made of the horn of the wild bull and tipped with silver. Complete suits of scale-armor were made from it by the Arabians and worn as a protection in battle. Horn lanterns are described in the writings of Pliny, who also adds that "various other ornamental articles were made of dyed and painted horn." Horn is also largely used for spoons, spatulas, handles and backs for brushes, including shaving and tooth brushes, handles and tips for umbrellas and canes, pipe stems, corset stays, shoe and belt buckles, powder horns, mouthpieces to musical instruments and as ferrules in silver and metal ware. About fifty years ago the horn manufacturers and dealers in Scotland presented to Queen Victoria a book on the horn industry, the covers of which were made of pressed horn.

Tortoise shell, once more generally used in the manufacture of combs than horn, is today scarce and consequently very costly. In fact, there are few tortoise-shell combs on the market. A tortoise-shell puff-comb, which a hundred years ago could be bought for a few dollars, would cost at the present time about twenty-five dollars. Horn and celluloid are

MACHINE INVENTED BY W. ROGERS

For making fine side-combs from tortoise shell

aa Supporting plate *b* Winch attached to axle *c* *de* Upright piece between which and *d* the crank of axle is situated *g* Piece on which bar *h* hinges *i* Collar on bar *h* secured by screw and connected by means of a link with cranked part of axle *k* Loop which prevents bar *h* from swerving to either side *l* Cutter *m* Tortoise shell out of which two parted combs are to be made

now so skillfully colored to imitate the genuine shell that only an expert can detect the difference. A century ago Spanish women would pay as much as fourteen dollars for a comb of plain tortoise shell, as the plain was considered superior to the mottled which, when made into a comb, brought only about six dollars. Today plain tortoise-shell combs are rarely seen, and combs of the mottled shell often sell for several hundred dollars. Tortoise shell is an important article of commerce in India, China, and the islands of the Pacific. The shell plates are removed by heat from the back of the living turtle, after which he is thrown into the sea again in order that other plates may grow. From a large turtle, fifteen or sixteen pounds of tortoise shell can be obtained. The preparation of tortoise shell is similar to that of horn. While it is being softened, a little common salt is added to the boiling water to set the color. As a strong brine makes the shell brittle, care must be taken not to use too much salt.

The old English method of joining two or more pieces of tortoise shell was by laying their edges together, placing them between thin boards and inserting the whole in the jaws of a screw-press which is put for several hours into boiling water and tightened from time to time. In this way

the separate pieces are united at a heat so low as to injure neither texture nor color. It is not advisable to apply a dry heat, as such heat is generally too great and results in deepening the color of the shell. Less fusible than horn, tortoise shell cannot be made soft enough to be moulded without some injury to its color. Therefore, manufacturers never used to attempt ornamental open work on tortoise-shell combs by means of dies. Instead, they would paste a paper, on which the desired pattern had previously been drawn, over the comb and cut out the pattern by means of drills and fine saws. The paper was then removed by steeping in water and the surface of the comb finished by an engraver.

An Englishman by the name of Rogers invented as early as 1831 a machine to reduce the waste of tortoise shell in making small side combs. So far as is known, it was never used in this country, but at one time it was widely used by English manufacturers.

In the "Cyclopædia or Universal Dictionary of Art, Sciences, and Literature," by Abraham Rees, D.D., F.R.S., F.L.S.S., American Society, published in London in 1819, there is an interesting account of comb-making and the treatment of the materials from which combs are manufactured. It says: "Combs are not only made for the purpose of cleaning the hair, but for ornament: they are sometimes set with brilliant stones, pearls, and even diamonds; some again are studded with cut steel; these are of different shapes, and are used to fasten up the hair when ladies dress without caps. Combs may of course be had of all prices, from the value of a few pence to almost any sum. They are generally made of the horns of bullocks or of elephants, and sea-horses' teeth, and some are made of tortoise shell and ivory, others of box or holly-wood. The horns of bullocks are thus prepared for this manufactory: the tips are first sawn off; they are then held in the flame of a wood fire, this is called roasting, by which they become nearly as soft as leather. While in that state they are slit open on one side, and pressed in a machine between two iron plates; they are then plunged into a trough of water, from which they come out hard and flat; they are then sawn into lengths, according to the size wanted. To cut the teeth, each piece is fixed into a tool called a claw. The maker sits on a triangular sort of a stool to his work, and under him is placed the claw that holds the horn, ivory, etc. that is to be formed into a comb. The teeth are cut with a fine saw, or rather a pair of saws, and they are finished with a file. A coarser file, called a rasp, is used to reduce the horn, etc. to a proper thickness; and when they are completely made, they are polished with charcoal and water, and receive their last finish with powder of rotten stone. The process used for making ivory combs is nearly the

same as that already described, except that the ivory is first sawed into thin slices. The best ivory comes from the Island of Ceylon and Achen in the East Indies, as it possesses the property of never turning yellow; it is consequently much dearer than any other kind.

"Tortoise-shell combs are much esteemed; and there are methods of staining horn, so as to imitate it, of which the following is one: The horn to be dyed is first to be pressed into a flat form, and then done over with a paste, made of two parts of quick-lime and one of litharge, brought into a proper consistence with soap ley. This paste must be put over all the parts of the horn, except such as are proper to be left transparent, to give it a nearer resemblance to tortoise shell. The horn must remain in this state till the paste be quite dry, when it is to be brushed off. It requires taste and judgment so to dispose the paste, as to form a variety of transparent parts, of different magnitudes and figures, to look like nature. Some parts should also be semi-transparent, which may be effected by mixing whiting with a part of the paste. By this means, spots of a reddish brown will be produced, so as greatly to increase the beauty of the work. Horn thus dyed is manufactured into combs, and these are frequently sold for real tortoise shell. The wages of journeymen in this business are from 21s. to 31s. per week. In Plate XV of *Mechanics* is represented a machine for cutting combs, for which Mr. William Bundy, of Pratt Place Camden Town, took out a patent in the year 1796."

Among the other materials used in comb-making was brass, for in 1811 brass combs with brass wire teeth were manufactured in Saratoga County, New York. Still later a metal comb was made of lead and called the "magic comb," as it was "supposed to turn grey hairs and whiskers to their 'original' color." Although such combs are referred to by Horace Greeley in his "Great Industries of the United States" as a modern invention, they seem to have appeared earlier, for Lord Bacon in "Sylva," published about 1626, speaks of making hair black "by combing it with a Leaden Comb." As late as 1851 we find bronze combs mentioned. Both the Chinese and the Romans were famous for their boxwood combs, and Chinese reed combs are examples of the finest workmanship that can be found.

Hard rubber was early adapted to the making of combs and from the beginning proved very satisfactory. As this history has been confined to a study of natural products such as horn, tortoise shell and ivory, no attempt will be made to present a description of the rubber comb industry, although rubber has proven one of the few satisfactory materials used in comb-making today.

Although the haste of modern manufacturing prohibits the delicate carving of ivory, so common in mediæval times, yet combs of this material are still unexcelled in beauty. The tusks of elephants, which furnish ivory for all countries, differ greatly in size. The largest tusks and those which provide the best ivory are taken from the dauntela, a species of male elephant. Tusks from Bengal rarely exceed seventy-two pounds avoirdupois weight, although there are some in museums which weigh one hundred and fifty pounds each. Ivory dealers consider the tusks of the African elephant of a better texture and less liable to turn yellow than those of the Asiatic.

Ivory combs, it would seem, were first made in this country about 1789 by Andrew Lord of Saybrook, Connecticut, who cut out the "plates" and the teeth with a hand saw. All processes of manufacture were extremely slow in those days but that of making ivory combs was particularly so, as the tusks differed greatly in the fineness of their grain, and their susceptibility to warping and breaking demanded that they be handled with the utmost care. To make an ivory comb, a tusk was sawed by hand into blocks of varying lengths which were again sawed into rectangular bars about half an inch in thickness. The bars were then rounded and on a narrow, flat surface left on one side, a row of tiny sockets was carefully drilled. The teeth, which had been sawed separately, were shaped and pointed by means of delicate tools similar to those used in the making of horn combs. They were then driven with a small hammer into the sockets which they had been shaped to fit. In holes drilled through the back of the comb brass pieces were inserted. Last of all came the smoothing and polishing. The result was a very beautiful dressing-comb that would last a lifetime.

John Graham of Boston and Isaac Tryon of Glastonbury, Connecticut, made ivory combs about the same time as Lord Tryon is said to have used machinery in the manufacture, although this statement is not corroborated by official evidence. If not the same man, he was undoubtedly a relative of the Tryon of Connecticut, who in 1798 procured what are said to be the first patent papers issued for comb-making machinery.

Abel Pratt of Saybrook, Connecticut, was making ivory combs about 1798. He cut out the "plates" and comb teeth by means of circular saws and machinery which was "moved by hand and afterwards by wind." It was then a good day's work to saw two hundred and fifty plates, but by 1849 invention had made it possible for four thousand plates to be sawed in a day by one man.

Ezra Williams, also of Saybrook, began an ivory comb business in that

DISPLAY OF HORN COMBS BY UNION COMB COMPANY OF LEOMINSTER
at Philadelphia Centennial Exhibition of 1876

town soon after Pratt, and sawed the plates of ivory with machinery run by water power. His business, continuing for many years, was later conducted as George Reed and Company, a progressive firm which invented or improved much of the machinery used in ivory comb-making and at one time did nearly all the ivory comb business in the country.

About 1800 Orrin Pearl had a comb factory for a few years at Plantsville, a small community about a mile and a half from Southington, Connecticut. In 1832 Samuel G. Merriman "associated himself with others in the manufacturing of ivory combs" in Marion, Connecticut. These men built a factory on the west side of the highway and "on the edge of the stream just south of the home of Philo Barnes."

The manufacture of ivory combs was commenced in Connecticut in 1819 by Merriam and Collins, who had a shop in the west part of the town. The company used the best machinery available at that time and made only the highest grade combs. According to town records for the year 1822, John B. Collins of Hartford sold to Merriam and Collins his invention for sawing ivory for combs. When Collins died five years later, Merriam sold his own half interest in the business to Walter Webb

DISPLAY OF COMBS, CHAINS AND PINS BY JOSLIN, PALMER AND WILLIAMS
OF LEOMINSTER

at Philadelphia Centennial Exhibition of 1876

and Albert Foster who conducted it under the name of Walter Webb and Company.

Julius Pratt began the manufacture of ivory combs in Meriden in 1822 in a factory first located on Harbor Brook on the south side of the land later occupied by the Bradley and Hubbard Manufacturing Company. Two years later Pratt, not finding the water power sufficient, bought land on Broad Street where he built a shop for manufacturing ivory combs. He also admitted to partnership Thomas Howard of Providence, Rhode Island; Alpheus Starkey, George Reid, John C. Rodgers and George Spencer of Saybrook, Connecticut; and Fenner Bush of Meriden, Connecticut.

The firm was known as Howard, Pratt and Company. Many improvements in comb-making were introduced by Aaron and Ezra Pratt, Fenner Bush, and Zina K. Murdock. Murdock and Bush invented an arrangement for cutting the teeth of combs, which was an exact reversal of the former method, as the fine saw remained stationary and the ivory plate moved until it reached its length when it stopped automatically. Because this idea was not patented, it was carefully guarded by its inventors. Elisha and Ezra Pratt formerly made combs in Hartford, Connecticut, cutting the teeth and doing all the work by hand.

The Pratt factory burned, and Walter Webb of Walter Webb and Company, who had moved from Meriden to Deep River and was then doing business in Hanover in the comb factory formerly occupied by Philo Pratt and Company which he had bought out, offered the use of his plant in Deep River to Pratt. Pratt accepted the offer and within a few days was manufacturing there. It was due to Pratt's business acumen and resourcefulness that Howard, Pratt and Company, known after Howard's death as Julius Pratt and Company, proved so prosperous. In 1836 Julius Pratt and Company united interests with George Reed and Company and Pratt Brothers and Company of Deep River, forming a joint stock company with capital of \$175,000 under the name of Pratt, Reed and Company. W. Batsford and Company manufactured ivory and boxwood combs successfully in Meriden and Orsamus Crocker made wooden combs there in 1845 "employing seven hands."

It was not until the late thirties that "ivory dust," the waste from the manufacture of ivory goods, was believed to be of value as a fertilizer. The idea spread like wildfire through the countryside, and the inhabitants of Meriden hastened to the factories to buy this valuable dust for their orchards and farm lands. Some of it was wet from the saws and some dry from the finishing rooms, but, wet or dry, it turned the land a dingy brown to the consternation of the experimenters. The following spring the grass became green again. The experiment had been a success after all.

Patent papers were issued to Calvin B. Rogers of Saybrook in 1845 for an "improvement in machinery for Dressing Combs." Leander Bishop, in "A History of American Manufacturers," says: "Mr. Rogers appears to have been the first person who ever invented self-acting machinery for Dressing Comb. Previous to this invention the blanks or bits of ivory from which the comb is made were fashioned by hand and a good workman could dress six hundred blanks per day. By means of Rogers' machine three thousand blanks can be finished per day." Bishop also states that in 1845 about 400,000 dozen fine-tooth ivory combs were made annually

in America. In 1849 all the ivory combs produced in this country were manufactured in Connecticut, and nearly two-thirds of them in Meriden, which continued to hold an important place in the industry. Litchfield, Middletown and Mansfield, Connecticut, all had their comb factories. Half a century later, in 1892, the principal ivory comb factory in the country was located in Meriden. Today ivory combs can be sold at less than half their former price, for, although the raw material is as expensive as it was one hundred years ago, improvements in machinery have brought about increased production.

Among the substitutes for horn, ivory and tortoise shell is a substance known as vegetable ivory which is made from the meat of a large, slightly rounded nut. About fifty years ago some rubber gatherers, at work in the forests of northern Ecuador, found a peculiar species of palm tree—the *Phytelephas macrocarpa*, called by the natives the “tagua palm”—which bore nuts whose meat so closely resembled ivory that one of the group suggested its possible use as a substitute. Some nuts were sent to Europe where their value in the manufacture of buttons, combs and other small objects was soon recognized.

The buttons and balls which decorated the old button and ball combs were made of vegetable ivory. Ball combs, effectively ornamented with colored balls of various sizes, were worn during the Civil War and were as popular as the Spanish back-comb of later days.

A material called galalith has also been experimented with as a substitute for ivory, horn and celluloid. It is manufactured chiefly in France at Levallois-Perret, a northern suburb of Paris, by the Compagnie Internationale de la Galalithe Hoff et Cie, and at Harburg, Prussia, by the Vereingte Gumminwarren Fabriken, and is obtained by the compression and formalization of commercial casein. The casein is pulverized, kneaded with water, and dried in a hydraulic press. The action of heat welds the casein molecules and a homogeneous mass results which is hardened by being treated with formol, or formaldehyde. Galalith is used in the manufacture of combs, knife-handles, etc.

Joslin, Palmer and Williams, an old-time firm of Leominster, manufactured a peculiar but successful material, probably a galalith product, for comb-making from sour milk, which they purchased in large quantities. When a chemical was added the curds dried in a hard mass which was then pressed. The material, though not transparent, is similar to celluloid in appearance and colors well. A great deal of jewelry was made from it.

The British Patent Office on January 18, 1901, granted patent papers to G. C. Dymond for the making of “combs and like articles by moulding,

Courtesy Leominster Historical Society

HORN BACK-COMBS, BRACELETS AND ADJUSTABLE FIXTURE

1 and 3 Back-combs made by Rufus Kendall, Leominster 2 Ornamented back-comb, fifty years old
 4 Back-comb made by Gates and Kendall, Leominster 5 Horn back-comb 6 Horn bracelets
 7 Adjustable horn fixture 8 Horn round comb

turning or otherwise working composition obtained from specially treated casein and like materials." On October 31, 1860, T. G. Ghislin applied to the British Patent Office for protection of a process by which "a marine plant, *eiklonia buccinalis*, is treated by a chemical and other processes and used for combs of every description and razor handles." Ghislin, on April 28, 1864, again applied for patent rights on a process by which "compositions containing seaweed treated as described above, gums, india rubber, gutta-percha, resins, bituminous substances, paraffin, oily and fatty substances, together with fibrous material, potassium or sodium silicates, powdered chalk, talc, metallic oxides, gelatine, farina, alum, tungstic acid, powdered charcoal and similar substances are used for combs." It is curious that in the patent papers of the British Patent Office we find the only mention of the fact that "combs are manufactured of glass by cutting or moulding, or of metal which is afterwards glazed or enamelled, or of porcelain, chinaware or papier-mâché which may be colored or ornamented." The record also says: "the upper portions (of the combs) may also be formed of the above mentioned materials, holes being left for the attachment, by cements, of teeth manufactured of metal, tortoise shell, etc." On September 8, 1856, there was also granted by the British Office, a patent for the manufacture of magnetic combs "made from a steel plate with a magnetic bar enclosed in the back."

The advance of civilization and its increasing requirements have been accompanied by a growing scarcity of raw materials which has made quantity production of certain articles impossible. Although numerous attempts were made to find or invent other materials capable of replacing horn, tortoise shell or ivory, which every day became more difficult to obtain, none met with any degree of success until in 1870, when John W. Hyatt made his new discovery, a pyroxylin plastic composition called Celluloid, which name was registered in the United States Patent Office at Washington in 1873. The discovery was not made in any haphazard or sensational manner but was developed from Hyatt's attempt to make a billiard ball. Hyatt was a pressman in a small printing shop in Albany, New York, and was fond of an occasional game of billiards. One day he learned that the ivory from which billiard balls were made, was scarce and costly. The thought immediately occurred to him that he might invent a substitute. He had a general knowledge of chemistry and was particularly well informed in mechanics, and, above all, he possessed two rare gifts—inventive genius and the faculty of concentration, which were especially exhibited in his establishment of the Albany Embossing Company which was simultaneous with his billiard ball venture. After many at-

Courtesy Leominster and Newburyport Historical Societies

GROUP OF CARVED BACK-COMBS

tempts to adapt variously made pyroxylin solutions to a deposit or coating method for the billiard balls, he finally obtained a substance, which, though it did not have the resiliency of ivory, approached it in appearance. This was the beginning of a series of experiments with the purpose of extending his efforts beyond the billiard ball field and adapting unlimited amounts of a highly improved, in fact, revolutionary composition, to much greater use. This final, or highly improved composition, was the Celluloid of 1870. The manufacturing plant was soon moved from Beaver Street, Albany, where, under the name of the Albany Dental Plate Company, it occupied a part of the Hyatt's Billiard Company's building, to Eagle Street, Albany, where, on January 30, 1871, it was reorganized as the present Celluloid Company, the pioneer in this field and the company to which belongs the credit for this invention which has really revolutionized the industrial world. The Celluloid Company is now located in Newark, New Jersey.

As a material for combs and other toilet articles, celluloid filled a long-felt need, and as the years went on, the list of articles manufactured from it grew at a surprising rate. It has remained pre-eminent as a substitute for horn, ivory and tortoise shell. Although various other substitutes have been used, they cannot compete with celluloid, which, because of its great adaptability, has become an indispensable product in many branches of industry and the leading raw material in the manufacture of combs. Today the four largest manufacturers of this product are: The Celluloid Company, Newark, New Jersey; The E. I. Dupont de Nemours and Company, Inc., Allington, New Jersey; The Fiberloid Corporation, Indian Orchard, Massachusetts; and The Viscoloid Company, Inc., Leominster, Massachusetts.

It is interesting to note that Leominster has led all other towns in this country and the world in the manufacture of combs ever since the industry was founded there in 1775. The publication of this book commemorates the one hundred and fiftieth anniversary of the founding of the comb industry in Leominster, Massachusetts, the home and center of this industry in America.

CHAPTER IX

The Town of Leominster

TO comprehend clearly the significance of the industrial growth of any community, it is best to study the problems which confronted its pioneer settlers. With a knowledge of the history of the town, its natural facilities, its inhabitants and its early prospects, the story of its industrial growth takes on deeper interest and we are equipped to trace the influence of industries on the town and its inhabitants.

"Rocky and mountainous and poorly accommodated with meadow"—so read the description given by a committee sent out to examine the "New Grant," or the territory which was later known as Leominster. Although the years that followed revealed their estimate to be hardly justifiable, yet the densely wooded hills, which can scarcely be called mountains, and the unbroken expanse of wilderness must have presented a dreary prospect to settlers who had already spent years in overcoming the obstacles that a new land imposes.

Gershom Houghton, who in 1725 broke ground in the new region, was not only the first dweller there but the only permanent resident for seven years. In 1743, six years before Leominster was incorporated, there were only four families within the present limits of the town. There is no knowledge of the exact population at the time of the incorporation, but there were probably not more than twenty families scattered from Bee Hill to Chauloom Pond (Whalom Lake) and from Carter Hill to Massapoge, with scarcely a path for a wagon connecting them. It must have seemed to the handful of settlers that they had exiled themselves and dedicated their lives to hardship and privation without any hope of achievement.

There can be no more graphic example of the possibilities of small beginnings than Leominster presents. During the first thirty-six years its population increased to 973 persons. It was for Leominster, as for every other town in the colonies, the seedtime of prosperity with a harvest to be gathered in the dim future.

Courtesy Leominster Historical Society

In 1830

In 1873

MONUMENT SQUARE, LEOMINSTER

On August 27, 1774, in view of the unjust laws of the British Parliament, the inhabitants of Leominster openly expressed the principles which had always guided them in the words: "We recommend peace, firmness, and a manly fortitude in the asserting and maintaining to the utmost of our abilities, all our just, lawful and Constitutional rights and privileges." It was this spirit that had colonized Leominster and helped it through its second task—that of raising men and money during the struggle for Independence. Although every townsman, prior to the Revolution, had been a loyal subject to his King, during the whole period of the conflict few were even suspected of being Tories or unfriendly to the American cause. Each loyally performed his duty and complied with the requisites of his country. The close of the war found the town deeply in debt, but the sincerity of the feeling so strongly expressed at the beginning of the conflict gave its people courage to "carry on" and re-establish themselves financially even before many of the neighboring towns.

During the first half-century Leominster was exclusively a farming community. The gradual clearing away of the forests revealed a rich and fertile soil, particularly suited for the growth of grain. Large crops of wheat flour, Indian meal and flax were sent annually to the Boston markets. So strictly agricultural were the interests of inhabitants that for fifty years there were hardly enough mechanics to dress the cloth spun by the housewives, do the blacksmithing, or to build and repair the ploughs, carts and other implements of husbandry. Even the few who did such work were farmers and begrudged the time they were forced to devote to the trades. It was not until the early half of the nineteenth century

Courtesy Leominster Historical Society

MONUMENT SQUARE, LEOMINSTER

that the purely agricultural aspect of the community was invaded by the establishment of a potash plant, gristmills and sawmills about 1740, a tannery before 1780 and the manufacture of combs in the kitchen of Obadiah Hills. So rapid was the growth of these industries and so promising the outlook for their future that by 1800 the town had become an industrial center. It claimed, in addition to seven or eight comb shops, which, in the light of future developments, it is interesting to note, had a most humble and tardy advance, several oilmills, gristmills and sawmills, a brick yard, trip-hammer works, several stores, a tinware factory, coopering and an extensive manufacture of straw bonnets. Moreover, the census showed a population of 1486—an increase of 513 persons which could definitely be traced to the introduction of manufacturing interests. About this time, the citizens met and decided to petition Thomas Jefferson, President of the United States, to remove the Embargo Act of 1808, on the ground that the obstructions it imposed upon commerce might “injuriously affect their agricultural and other interests essential to their prosperity and happiness,” which shows that Leominster was realizing her newly acquired wealth and importance and was jealously guarding it. Commerce grew out of industry, finance came, distribution spread its arms and the general advancement required stability.

Courtesy Leominster Historical Society

VIEW OF LEOMINSTER

The years between 1800 and 1850 showed a remarkable increase in the variety as well as the number of industries in Leominster. However, it is the manufacture of combs that furnishes the most interesting story. The little kitchen industry of Obadiah Hills had grown into a business requiring several shops which in turn grew into factories. Manufacturers from all parts of the country came to Leominster, and by 1845 the town had more comb factories than West Newbury, which had always been the seat of the industry. The years between 1845 and 1852 present the most interesting figures relating to comb-making, for in the span of those seven years the number of persons employed in the manufacture increased from 146 to 400, the capital invested from \$22,000 to \$75,000 (exclusive of buildings, dams and fixtures) and the value of the annual production from \$77,400 to \$250,000. There was also an increase of fifty per cent. in population, caused by an influx of people attracted to the town because of the industrial opportunities it offered in all branches and particularly in the manufacture of combs. Agriculture, as an industry, was a thing of the past.

On Monoosnock Brook where, fifty years before, interspersed between well-cultivated farms, stood only a fulling mill, a small gristmill and a

Courtesy Leominster Historical Society

VIEW OF LEOMINSTER FROM GARDNER HILL

still smaller sawmill, there were erected numerous mills and factories. The five spacious farmhouses on the road to Lancaster were replaced by ten times as many houses belonging to manufacturers and their employees. To the south of the town between Monoosnock Brook and the small stream near Jonas Colburn's house, where once stood the lonely dwelling-house of a farmer named Colburn, were the house and spacious shop of a comb manufacturer of the same name. In addition, there were in this part of the town twelve or fifteen comb shops and factories, seventy-two dwelling-houses and two schoolhouses. Where Landlord Beaman once kept his famous hotel, the Fitchburg Railroad, completed in the spring of 1845, ran into a newly built depot. Near by, the "brick block" was in construction and about sixty houses had been erected. The old lane along which formerly rose the houses and farm buildings of eight prosperous farmers was known as West Street and lined with ninety residences of men engaged in manufacturing pursuits, two town-houses, one large schoolhouse, one tavern, two meeting-houses and three stores.

For fifty years Leominster had been changing from a farming community to a manufacturing town, and by 1850 the transition was complete. Perhaps the most reliable indication of a town's prosperity are its banks. Between 1850 and 1900 three banks were established in Leominster. These

institutions, through their intelligent management, so helped the manufacturing in Leominster to expand that by 1900 the industrial interests of the town included, in addition to a larger number of comb factories than any other city in the country, button, carriage, toy, piano, shirt, rattan, furniture, musical instrument, paper-box, paper and enamel manufacturing plants. The population of the town, according to the United States Census of 1900, was 12,392, an increase of 9,000 in fifty years. Today, the one hundred and fiftieth anniversary of the comb industry in Leominster, the population is estimated at over 22,000.

Leominster in 1900 bore little resemblance to the settlement made nearly two hundred years before in a wilderness that apparently held so little promise. But here ends our story, for after that time, because of the decrease in the supply of horns due to the dehorning of cattle, new substitutes, to some extent rubber but especially pyroxylin plastic materials, practically took the place of horn in the manufacture of combs. And that is a story in itself which is not properly a part of this book.

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